

***CryptoRiyal:***  
**Supporting Neom's**  
**Smart City, Smart Industry and Smart Agriculture**

Whitepaper

Version 1.0, August 2018

## Table of contents

## Executive Summary

The SmartRiyal platform and the CryptoRiyal token (sign: CRR) are innovative means of trade, payment and the underpinnings of technological advances especially developed to fulfill the needs of the businesses and residents of Neom City – Saudi Arabia's \$500 billion urban development project. Both services provide a fully secure and trusted financial network that enable rapid money transactions and transfers for services and products between Neom businesses, inhabitants and public authorities and business partners at a marginal cost. Since Neom is in the midst of its construction, the population that will move into the city in its early stages will need rapid solutions to develop employment, industry, services and businesses that are provided by CryptoRiyal's channels of fast payment and investment in Neom-based ventures. Therefore, CryptoRiyal is issued with a major aim – to support the growth of the city and its economy in the fastest and most suitable ways.

CryptoRiyal tokens can be transferred from one electronic wallet to another, kept and saved or converted into fiat money or to other crypto-currencies on the SmartRiyal platform. SmartRiyal is built to enable fiat-to-crypto, crypto-to-crypto and data-to-crypto transfers based on the Ethereum Blockchain. SmartRiyal is accessible by anyone everywhere and presents the ultimate solution for avoiding time-consuming face-to-face meetings for money transfers, expensive money transfers via banks and money transfer agencies or trust issues, due to the smart contract implemented in the system and the fully protected encryption method of the Blockchain. Further, SmartRiyal is built on the basis of advanced Artificial Intelligence and Machine Learning algorithms to collect, process and learn from data that users transmit and to generate real time recommendations to them in every sector of Neom's business and technological activities.

The CryptoRiyal token supports all the financial requirements that are derived from the futuristic vision and characteristics of Neom and provides the state-of-the-art technological solution for all of Neom's target sectors, as well as to any other financial, economic or business need:

- Agriculture and food
- Energy and Water
- Mobility and transportation
- Biotech
- Advanced manufacturing technologies
- Media

- Entertainment

CryptoRiyal's Hardcap is XXX million USD (approx. XXX ETH) and our Softcap is XXX million USD (approx. XXX ETH). The stages of our private sale, pre-ICO and ICO are listed as follows:

The CryptoRiyal private sale will begin on XXX XXX, 2018 and will continue until the end of the ICO. The private sale will a XXX% bonus for private sale purchases of over XXX USD per purchase and will provide XXX% of the total number of CryptoRiyal tokens that are planned to be minted (XXX million tokens) at the following rate:

1 USD (or its equivalent in BTC or ETH) = 19 CRR tokens, representing a XXX% bonus

The CryptoRiyal pre-ICO sale will take place between XXX XXX, 2018, at 12:00 PM CET and XXX XXX, 2018, at 12:00 PM CET. The pre-ICO will offer XXX% bonus for pre-ICO buyers on XXX% of the total number of CRR tokens that are planned to be minted (XXX million tokens). Purchases of more than 100 USD can be made in BTC, ETH or via credit card purchases according to the following rate:

1 USD (or its equivalent in BTC or ETH) = XXX CRR tokens, representing a XXX% bonus

The CryptoRiyal ICO crowd sale will begin on XXX XXX, 2018, at 12:00 PM CET and will last until XXX XXX, 2018, at 12:00 PM CET, offering XXX% of the total number of CRR tokens that are planned to be minted (XXX million tokens). Purchases can be made in BTC, ETH or via credit card purchases according to the following rate:

1 USD (or its equivalent in BTC or ETH) = 14 CRR tokens, without a bonus

XXX% of the tokens (XXX million tokens) will be dedicated to CryptoRiyal's team to proceed in developing the token, the platform and the data and mining center, and XXX% of these tokens will be locked for one year. This amount will also be used to foster the widespread recognition of the CRR token by allocating XXX% of the tokens (XXX million tokens) to advisors. An additional XXX% of the tokens (XXX million tokens) will be allocated to pre-ICO and ICO marketers and promoters to support the reputation of the CRR token and CryptoRiyal.

# **Introduction**

## **Benefit from Saudi Arabia's Mega City Development**

CryptoRiyal was established to support the economic and business development of the Neom city - Saudi Arabia's futuristic and innovative mega city. Neom's construction is based on an ambitious \$ 500 billion mega-development plan that will fully rely on renewable energy sources and will foster innovation in multiple industrial, economic and technological domains.

### **What is the scale of opportunities in Neom?**

Neom is planned to be bigger than Dubai and to operate a vast number of robots – more than the size of its expected population. The name Neom was constructed from two words. The first three letters form the Greek prefix neo- meaning “new”. The fourth letter is from the abbreviation of Mostaqbal, an Arabic word meaning “future” (Al Arabiya, 2017). Crown Prince Mohammed bin Salman presented the vision and the construction of Neom as a jump for humanity and civilization beyond any traditional Saudi restrictions that will become a world business and technology center for advanced products, bio-techniques, media and airlines (Carey, Nereim & Canon, 2017).

Neom will be a huge city in the northwestern part of Saudi Arabia, which should be located in three countries, and at the same time it is the first private zone to cover three countries. The city, which according to plans will extend to Egypt and Jordan, will cover 26,500 square kilometers and the Saudis also intend to build a magnificent new bridge between Egypt and Saudi Arabia that will connect Asia with Africa. The conditions for life and work in this city should be top-notch, and education, health and culture will be at the highest level. In short, this city should provide its residents with an idyllic way of life. This city is practically growing out of sand and requires the construction of a complete infrastructure that should provide maximum efficiency and sustainability. Since mobility is one of the pillars of this city, it is planned to build a 100% ecological transport system. Neom is a city that extends over continuous length of over 468 km with beaches and coral reefs, as well as mountains up to a height of 2500m.

### **How will CryptoRiyal assist Neom's development?**

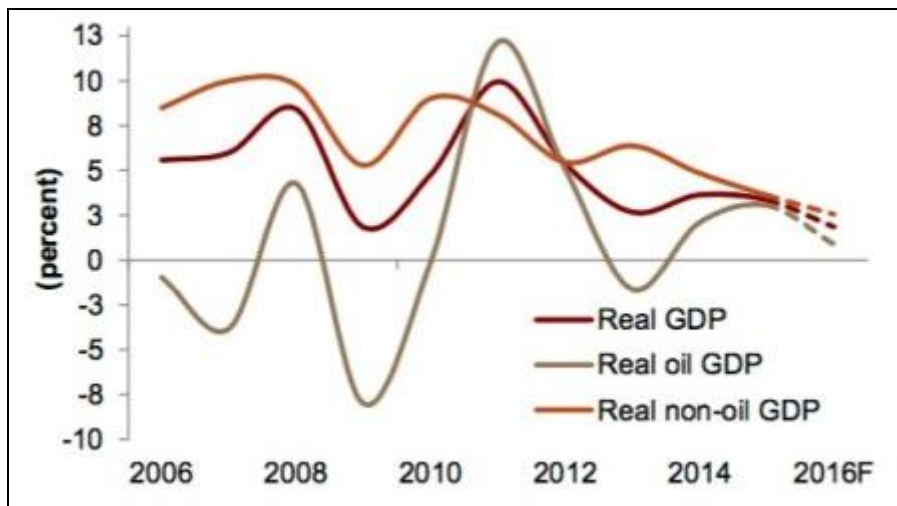
CryptoRiyal aspires to be a part of this national effort and global achievement by providing the financial infrastructure to support multitude business activities in this mega-venture. Such a city

will need a ready-made payment and financial means of payment and investment that will serve its inhabitants at a very low cost, will enable seamless transaction of funds between its businesses, as well as worldwide, and will integrate with the robots and automated machines for payment purposes. The strategic location of this city will give the opportunity to 70% of the world's population to reach it in less than eight hours, bringing the potential to combine the best of the world's professionals and talents in terms of knowledge, technology, research, learning, living and working. However, attracting these talents on a global basis needs substantial financing and we provide the means to do so by enabling rapid channels for investments and transfer of funds on the Blockchain. Additionally, talented professionals are not attracted only by salaries (which are offered to them worldwide), but mostly by the challenge to become pioneers in a new mega-city and to analyze the state-of-the-art data and information in their field to produce new knowledge. CryptoRiyal's data-to-crypto payments encourages the disclosure of anonymized data for R&D purposes and top-talents will gain access to studying these data to develop new biotechnology products, retail strategies, agricultural techniques and more.

### **Who will be the potential stakeholders to use the CryptoRiyal?**

The vision and the unique concept of this mega-city is the result of the ambition of Saudi Arabia to develop into a leading global center by introducing industry chains and cutting-edge technology, making this country a model of excellence in diverse and important areas of life. The project will be funded by the Saudi Arabia government, the Saudi Arabian Public Investment Fund and by numerous private and international investors. We expect that some of the institutional and private investors will invest in the CryptoRiyal due to its potential to foster the development of Neom in its first stages of development and later, when the cryptocurrency will become a standard of payment. Additionally, the innovative data-to-crypto program can facilitate data-driven innovation and therefore can attract investors who specialize in digital technologies and payment transfer systems.

### **What are the potential use cases of the CryptoRiyal?**



**Figure 1:** Saudi Arabia's growth ratios per annum (Source: <http://susris.com/2016/02/07/analysis-the-saudi-economy-in-2016-jadwa/>)

	2012	2013	2014	2015 E	2016 F
Agriculture	1.3	1.9	1.8	0.8	0.5
Manufacturing	4.1	3.4	9.5	5.8	2.0
- Petroleum refining	4.1	-47	19.6	12.9	0.6
- Other	4.1	6.3	6.3	3.2	2.6
Electricity, gas and water	5.9	1.6	4.8	5.1	4.0
Construction	4.8	7.8	6.7	5.6	2.0
Wholesale & retail trade	6.0	6.6	6.0	3.9	3.6
Transport & communication	4.9	6.4	6.2	6.1	3.3
Finance	7.5	9.2	3.3	2.6	1.8
<b>Non-oil private sector</b>	<b>5.5</b>	<b>7.0</b>	<b>5.4</b>	<b>3.7</b>	<b>2.6</b>
Oil	5.1	-1.6	2.1	3.1	0.9
Government services	5.3	5.1	3.7	3.3	2.5
<b>Total</b>	<b>5.4</b>	<b>2.7</b>	<b>3.6</b>	<b>3.4</b>	<b>1.9</b>

**Figure 2:** Saudi Arabia's growth by sector per annum (Source: <http://susris.com/2016/02/07/analysis-the-saudi-economy-in-2016-jadwa/>)

In recent years, the Saudi economy experienced fluctuations of growth and quasi-depression (see Figure 1), due to changes in demand to its traditional basis of products and in particular to oil. Consequently, part of the motivation to facilitate growth in Saudi Arabia's economy is underpinned in development of new and innovative industries that previously gained little attention by the Kingdom's ministries (see Figure 2).

Neom's development aims at fulfilling the purpose of fostering growth in Saudi Arabia via new technological advances and to serve as a model for the country as a whole. All the services and processes planned to operate in Neom and to serve its residents will be 100% fully automated, with the aim of becoming the most effective and technologically advanced destination in the world. In this respect, Neom will become the first independent economic zone in the world that

functions independently on the basis of automation, robotics and information and communication technologies. The city will remain under the Saudi Kingdom's sovereignty, but will have its own laws, taxes and regulations specifically designed to encourage the development of wealth in the region (Karasik, 2017).

With this vision of automated society of consumers of services and goods, payments have to be fully secure, trusted and user friendly – that is fully digital - to avoid the inconveniences and the issues associated with money and credit card payments, such as rejection of damaged money notes by automated machines, magnetic card reading problems, etc. Only CryptoRiyal has a complete digital means of payment that are free of any physical dimension that can cause problem in paying for services and goods. Neom's automated service and product provision machines will have an interface to receive and to deliver CryptoRiyal on the SmartRiyal platform in a rapid and seamless way that does not involve any physical user interface and is based solely on the transfer of digital tokens.

Moreover, 70% of the population in Saudi Arabia is less than 30 years old and Saudi Arabia promotes Neom as a lucrative living destination for its young population. Therefore, we expect a fast and broad adoption of CryptoRiyal for money transfers and payments among this vast population that is highly proficient in new technologies, well educated and open to new technological advances, either among the inhabitants of Neom or among its visitors and business partners.

### **What will be the expected levels of CryptoRiyal use in Neom?**

Neom puts its residents in the first place by investing in technology, with Saudi government spending significant amounts on tourism (\$15 billion), healthcare (\$12.5 billion) and education (\$5 billion). Further, Neom's total construction costs are expected to amount to \$500 billion. As Neom's residents, visitors and tourists are going to use the CryptoRiyal to operate automated services and to purchase goods, we expect high levels of CryptoRiyal adoption and use among inhabitants, as well as among frequent and casual tourists. The high quality life offered to citizens, the high standard in health, education, entertainment and other aspects of life, as well as world attractions in culture and art provided to tourists suggested high and rapid circulation of the token. Consequently, the demand for the CryptoRiyal tokens will increase vis-à-vis the development of Neom, leading to appreciation of their value for early investors and token holders.



## The Problem

Work on Neom has already begun and the first steps were establishing communication and establishing connections with a large number of potential investors and partners. The construction began with some basic infrastructure. The first phase of Neom's construction is planned to be completed by 2025. However, for the beginning and the interim phases of inhibiting and developing the city, Neom may confront social issues related to high unemployment rate, due to the gradual nature of urban development, although this project aims to improve the overall economy and living standard for the citizens of the kingdom. It is expected that this project will generate 35,000 jobs, according to fellow officials. Although the cost of this project is indeed steep even for the Kingdom of Arabia, they have committed themselves that Neom will materialize. Financing Neom may become difficult by time, especially because the price of oil is low and the price of oil in the coming months and years will determine how Saudis will easily finance the first stages of this great project. Additionally, many investors have already expressed interest in investing billions of dollars in AI, infrastructure, transport, health and education in Neom.

In order to assist Neom's development, in particular in its early stages of growth and economic development, and to support the continuous and trusted growth of this mega-city, economically sustainable environment should reassure the financial stability of businesses (as well as the fees paid by them to employees). Additionally, investors are interested in the rapid economic maturity of the city to gain returns on their investments and real estate. The fulfilment of these requirement is essential for the future of any city and particularly for an ambitious and innovative city such as Neom.

## Our Solution

The CryptoRiyal token and the SmartRiyal token exchange platform aim at forming a new, fully secure and rapid monetary standard for Neom – serving every transaction from services and goods provided within it, imported and exported, to long term investments in its businesses and technological ventures. Further, the CryptoRiyal will provide both individuals, businesses and companies to monetize their data, to profit from anonymously sharing it and to be able to receive insights from the cumulative data that the system collects and analyzes by applying advanced Artificial Intelligence techniques.

CryptoRiyal will be traded, converted, transferred and distributed over the SmartRiyal platform – an online, Blockchain powered system that will continuously operate the following activities:

- Distributed collection of data from data contributors in an anonymous form

- Reward (in the form of CryptoRiyal tokens) allocated to data contributors in return for data received from them
- Exchange of cryptocurrencies-to-CryptoRiyal and vice versa and support of the conversion to/from multiple cryptocurrencies
- Exchange of fiat-to-CryptoRiyal and vice versa and support of the conversion to/from multiple fiat currencies
- Fully automated processing of the data (including historical records) by Artificial Intelligence and Machine Learning techniques and generation of business and technological insights and recommendations via predictive analytics models
- Distribution of the insights and recommendations generated by the system to business subscribers and receipt of CryptoRiyal tokens for them
- Support of monetary transactions in purchase of products and services, including mobile and point-of-sale (POS) integrations

These functions, as well as other forms of financial uses that will evolve over time, utilize the CryptoRiyal and the SmartRiyal platform and will underpin the economic activities and financial transactions in Neom from its very early stage of establishment and population movement through its ongoing growth to become the world's most advanced mega-city. All these activities (and many others that will be developed) are based on three major economic forms as follows: *CryptoRiyal Exchange*, *CryptoRiyal Growth* and *CryptoRiyal Insights*.

## **CryptoRiyal Exchange: A Monetary Standard**

CryptoRiyal tokens will be used for digital, rapid and fully secure transactions of products and services in Neom and between its external clients and trade partners and the city's businesses and inhabitants. Doing so, CryptoRiyal tokens provide a form of money standard (i.e. a monetary standard) that can serve the population, local businesses, public institutes, tourists, importers and exporters for any purpose. The main advantages of the CryptoRiyal are the rapid completion of domestic and, in particular, international transactions that are necessary due to Neom's location within three different countries (Saudi Arabia, Egypt and Jordan), minor transaction fees and full security and trust in the money transfers. Additionally, a significant proportion of Neom's private and public services will be automated and by using CryptoRiyal for operating and paying for them, we support full level of automation that does not depend on fiat money handling or POS and account management by humans. The level of efficiency is enormous, as not only we eliminate human workers to handle trivial tasks, such as money collection and counting, but we can also operate immediately service providing robots and

automated machinery once a payment is made without need for human control of these processes. All these significant advantages in the production and the global trade of services and goods as planned in Neom are enabled by the Blockchain highly strong and sophisticated encryption level and by its distributed public ledger mechanism that manages the token surplus in crypto-wallets.

## **CryptoRiyal Growth: A Financial Means for Investment**

The vision of Neom as a global leader in science, technology and industry in biotechnology and advanced materials is largely based on development of domestic facilities and advanced skill sets within the city or attraction of professionals to inhabit and develop them on the basis of their knowledge and experience. Both the construction of infrastructure and production plants, warehouses and supply chains as well as development of skills require substantial funds that are provided either by public or private investors. However, in many cases, investments are limited only to a small number of high-amount investors, those small sum investments from a large group of supporters proved as a significant mode of fund raising, as crowdfunding of companies and projects that attract the public's interest repeatedly proves.

The CryptoRiyal tokens will enable every holder of them to become a potential investor in any project or company that raises funds and will reduce the "search costs" needed to pursue and convince large investors to invest in the venture and will eliminate the legal and transfer costs needed to invest (and therefore make small investments impossible).

The reward for investors who invest CryptoRiyal tokens in companies and projects that will become successful can be in one of the following ways:

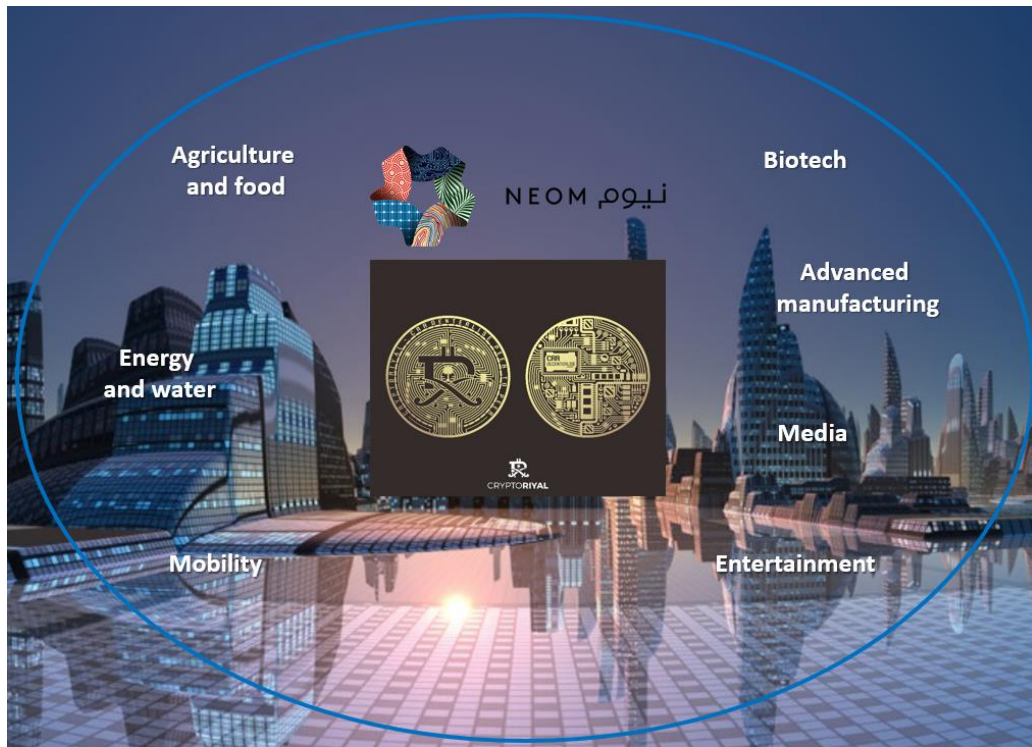
- A dividend paid directly to the wallet of investors in CryptoRiyal tokens (and can serve them for purchases, other investments or be converted to fiat money)
- A share of the company proportional to their investment – this share can be registered by the conventional legal means or can be transferred to the investors in the form of a smart contract
- The right to use future services and goods at a lower price in the volume of the tokens transferred to the company – for example, entrepreneurs planning an amusement park can sell future entries at a reduced price. Purchasers of future entries can finance by CryptoRiyal tokens the construction of the park and will receive entries that they will be able to use when the park will open.

# **CryptoRiyal Insights: Data and AI Based Recommendations**

The saying that “data is the new oil” suggests that not only that our economy operates in its major part on data (rather than on fuel), but also that machinery was replaced by computing facilities and data centers. This situation is critical to Saudi Arabia, which traditionally based its economy and wealth creation on oil. The Neom project is a realization that the city should operate independently of any fossil fuels (though these are accessible by Saudi Arabia in vast volumes) and instead should focus on prospecting and processing the new oil – data – to grow new forms of industries and innovation and to continuously increase its efficiency by automation. However, data are difficult to obtain as their disclosure requires anonymity (not to disclose private information or the identity of a business), security against data leaks and hacking and distribution of the processed outputs of them, in the form of reports or recommendations that do not reveal identities or details.

Nonetheless, many of the data generators are willing to contribute them since the generation and collection of data usually does not involve any additional effort, and will do so if they will be financially rewarded or gain access to insights produced from the collective data of many other contributors like them. The reward can be in the form of CryptoRiyal tokens paid to data contributors for the data streams that they share. The data will be collected and processed in the SmartRiyal’s dedicated data center by AI and Machine Learning algorithms that will be transformed into recommendations to users. Users will purchase subscription to the recommendation system by paying with CryptoRiyal tokens (these can be data contributors who wish to receive recommendations in return to their data or external users) and gain access to its insights. This advanced platform can assist in continuously analyzing and improving every aspect of Neom’s operations, from better farming through shortening queues to amusement parks to development of new medicines based on data on physical and medical attributes.

# Neom's Target Sectors as Use Cases of CryptoRiyal



Neom is conceived as a city that will represent a new world center of technology and business. Neom will not be just a technology park, but it will also be a luxury destination for life and tourism with luxurious shopping centers, restaurants and entertainment centers. On the site of this project are mentioned magnificent marinas, amusement parks that will be the largest in the world, non-transparent parks and the like. The project will be developed in a specialized zone, regardless of the existing government framework of the Kingdom. As such, the industry is able to produce and supply goods and services at globally competitive prices. In addition to the expansion of business sectors that enhance the economy of the Kingdom, Neom aims to develop the following key economic sectors and living conditions that will form the foundation of the future of human civilization:

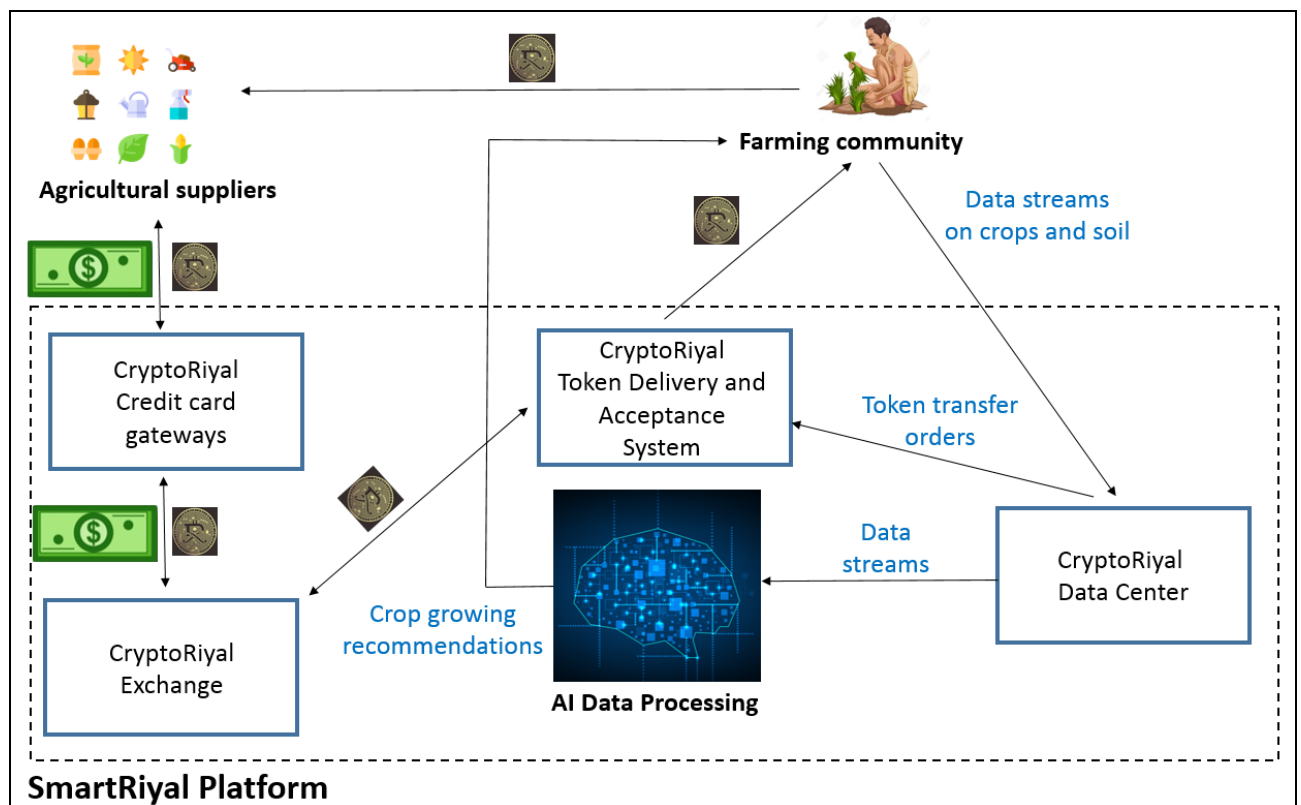
- Agriculture and food
- Energy and water
- Mobility
- Biotech
- Advanced manufacturing
- Media
- Entertainment

These target sectors will encourage economic growth and will deepen the production of innovation and new technologies, as described below.



**Figure 3:** Neom's geographical location (Source: <https://hmjvandenbosch.com/2017/11/19/neom-het-begin-van-een-saoedi-arabische-lente/>).

### Agriculture and food

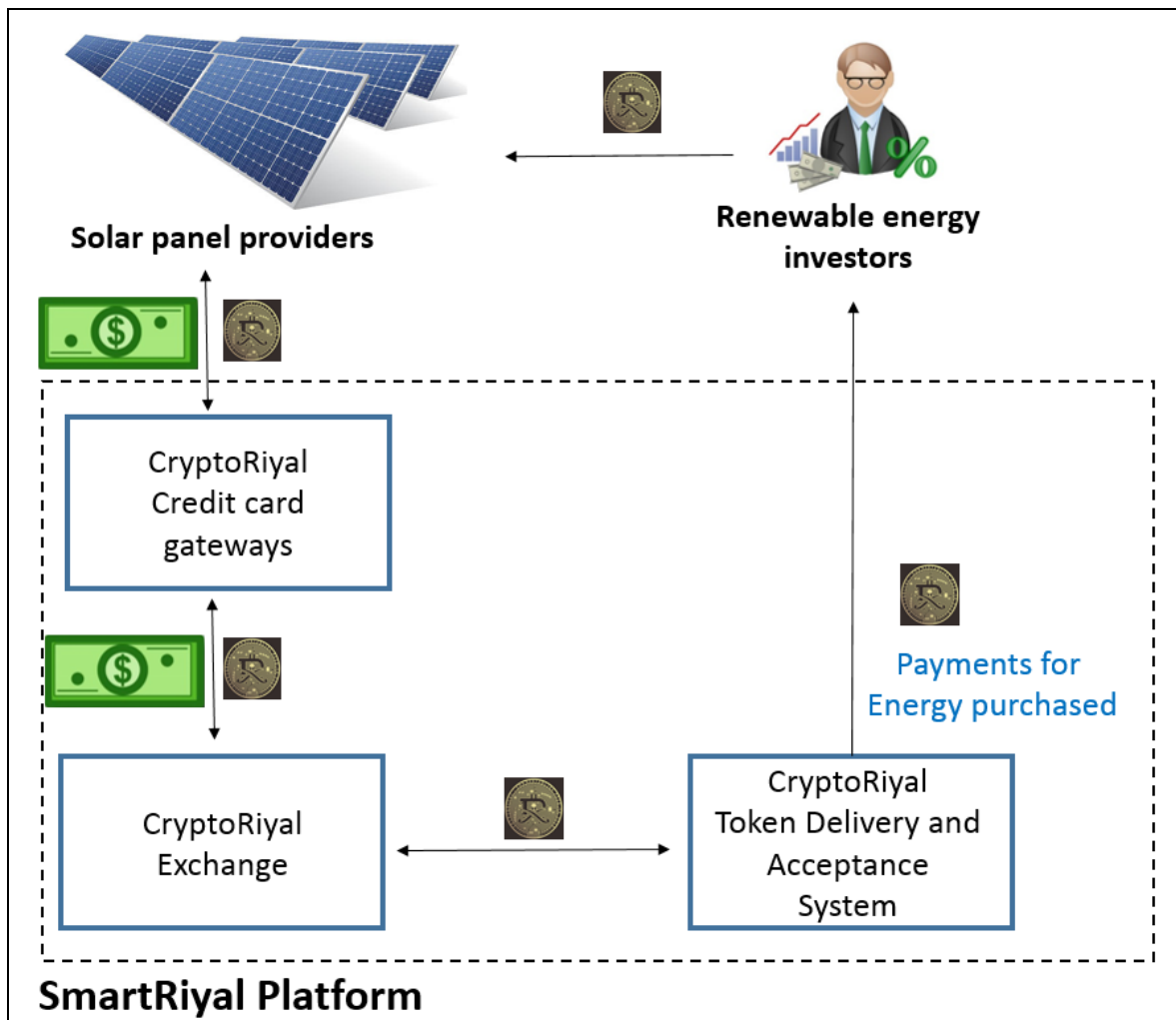


When it comes to building this mega city, some of the major challenges are the techniques in which water will be produced, flora will grow and fauna will live without water in this desert.

How to make fresh water is the main issue and the problem that the rest of world deals with, when it comes to Neom. What is certain is that Neom will find the solution and the key to this problem, as it is essential for the livelihood of the city. The solution to this problem lies in the latest technology, the breeding of seawater as well as the maintenance of greenhouses on solar energy. Its vertical urban farms will be skyward - delivering crisp, fresh produce to its citizens with unprecedented speed and space efficiency. Neom is ready to fully adopt the concept of vertical agriculture to afford food to its population in an efficient way, as well as drying seafood and solar plastic. The creation of a fertile oasis in this dry desert area will not be a small challenge. The future of food includes an international innovation center for food technologies, including seawater and desert farming and advanced aeroponic and hydroponic technologies of agriculture.

The tokenomics in the agricultural sector works as follows: Farmers can provide continuous data streams about the condition of the soil, the crops, the water, etc., by automated systems of sensors installed in their fields and farming facilities and be paid for them on the basis of the data-to-crypto program. In return, they can purchase agricultural recommendations from the AI based SmartRiyal platform that automatically processes, analyzes and learns from the data of all farmers that participate in the program. These CryptoRiyal Insights are delivered to the farmers that pay for them with CryptoRiyal tokens to continuously improve the performance of their farms. Farmers can also use CryptoRiyal to purchase supplies from agricultural suppliers. The suppliers can then keep the CryptoRiyal tokens that they receive in their wallets, pay with them for supplies or convert them to fiat money via the CryptoRiyal Exchange and its payment gateways.

## **Energy and water**



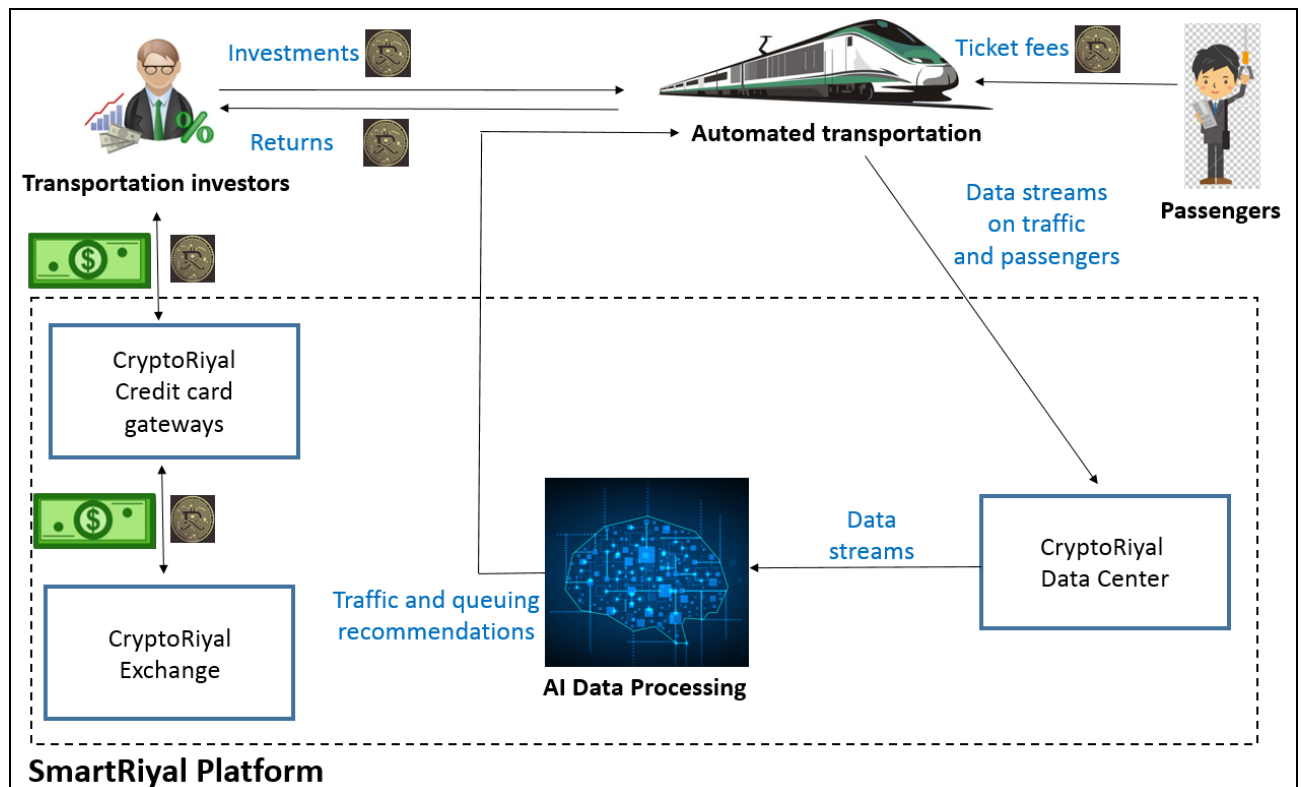
The next interesting question is how the metropolises of the Arab world will solve the challenges of energy transition. Energy security is an important issue, given the change in oil prices and the growing demand for energy. Thereupon, energy diversification policy that includes renewable energy and energy issues in cities are both relevant for Neom's future. These aspects trigger social mobilizations that have proven to be powerful and have encouraged governments to consider cities as factors that are important for energy management (Verdeli, 2018). Clean energy is at the top of the list of priorities for Neom, with large solar and wind power plants that are planned to supply its energy needs. In addition, large-scale storage solutions, as well as a desalination program for the renewal of fresh water from the Red Sea are planned. All these measures are sufficient to supply the entire needs of Neom with low cost regenerative energy sources that will enable a high degree of air purity and environmental stabilization. Neom will be a pioneer in the future for the production, use and storage of various types, as well as new types, of energy.

The renewable energy growth on the basis of CryptoRiyal use is demonstrated by solar energy production as follows: Investors in renewable energy will invest in a CryptoRiyal Growth



strategy by purchasing solar panels to produce electricity. The panels will be purchased by CryptoRiyal tokens that will be transferred to the panel suppliers via the SmartRiyal platform (where there can convert them back to fiat money by the CryptoRiyal Exchange, if they are interested to do so). The electricity will be sold to Neom's Electricity Company and the investors will be paid for it with CryptoRiyal tokens. Since solar energy is free and the proportion of sunny days in the region is close to 100%, the return on investment will be high, therefore encouraging investors to continuously develop solar energy production facilities, supporting Neom's clean energy vision.

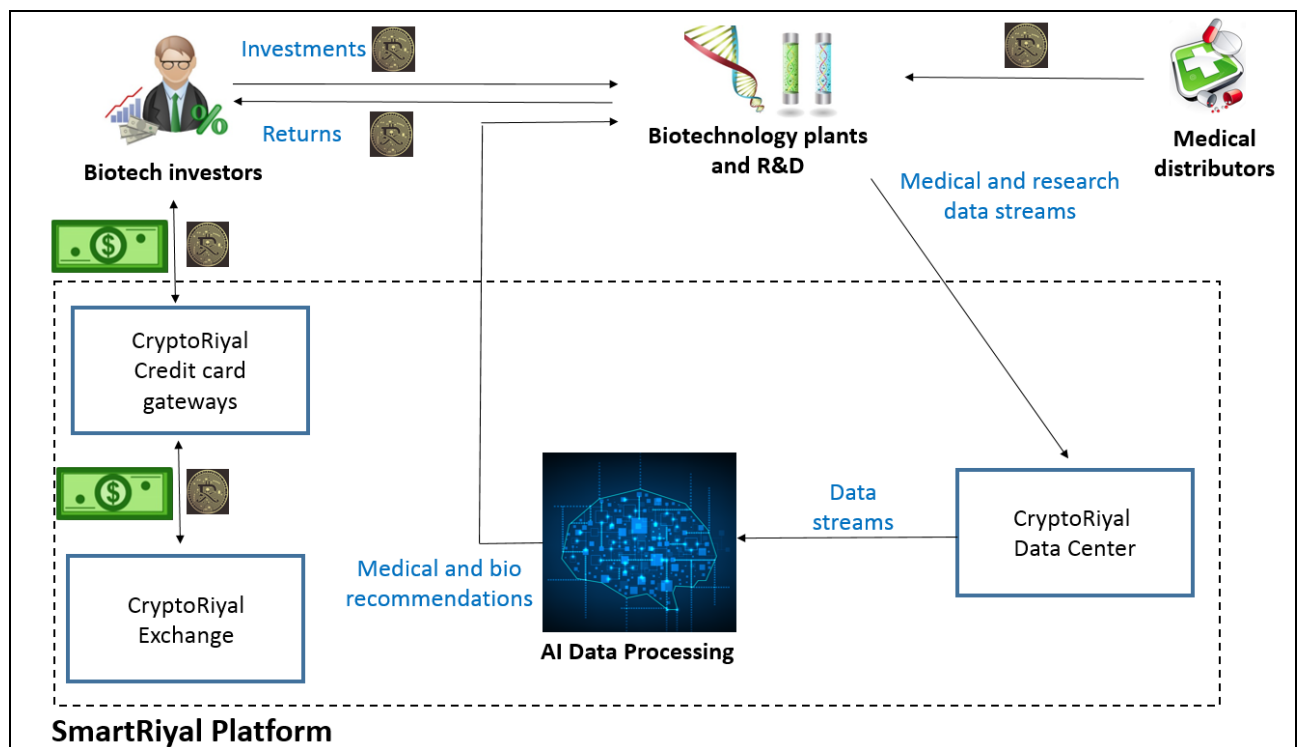
## Mobility



Neom is located in northwestern Saudi Arabia, with parts of the project expanding to neighboring countries Jordan and Egypt (see Figure 3). The geographical location of this city will be such that it will become a global connection link and transportation hub. Within its boundaries, it will harness progressive, automated, 100% green transport systems that will glide smoothly and safely in three dimensions along both superbly efficient and scenic routes. Beyond its borders, it will create brand new connections, such as an awe-inspiring new bridge that will link Asia with Africa and will be as strong as its iconic design. The future mobility opportunities include seaports, airports, autonomous transport solutions, such as autonomous vehicles/drones, and other forms of transportation. Neom mega-city project will most likely allow only electric vehicles to operate within its confines.

The tokenomics of the transportation projects in Neom works as follows: Public and private investors will develop the infrastructure of automated transportation in Neom on the basis of the CryptoRiyal Growth strategy for investors. The automated transportation will receive CryptoRiyal payments from passengers to enable ease of use and to prevent the problems, costs and need for human intervention associated with fiat money payments and credit cards. Investors will receive returns, as a proportion of the revenues of their transportation facilities, in the form of CryptoRiyal, thereupon facilitating additional investments in mobility and transportation. Additionally, data on passenger use and traffic will be continuously analyzed by the SmartRiyal AI system to generate recommendations that will continuously improve the queuing and waiting time of passengers, the transportation scheduling and the services provided to them.

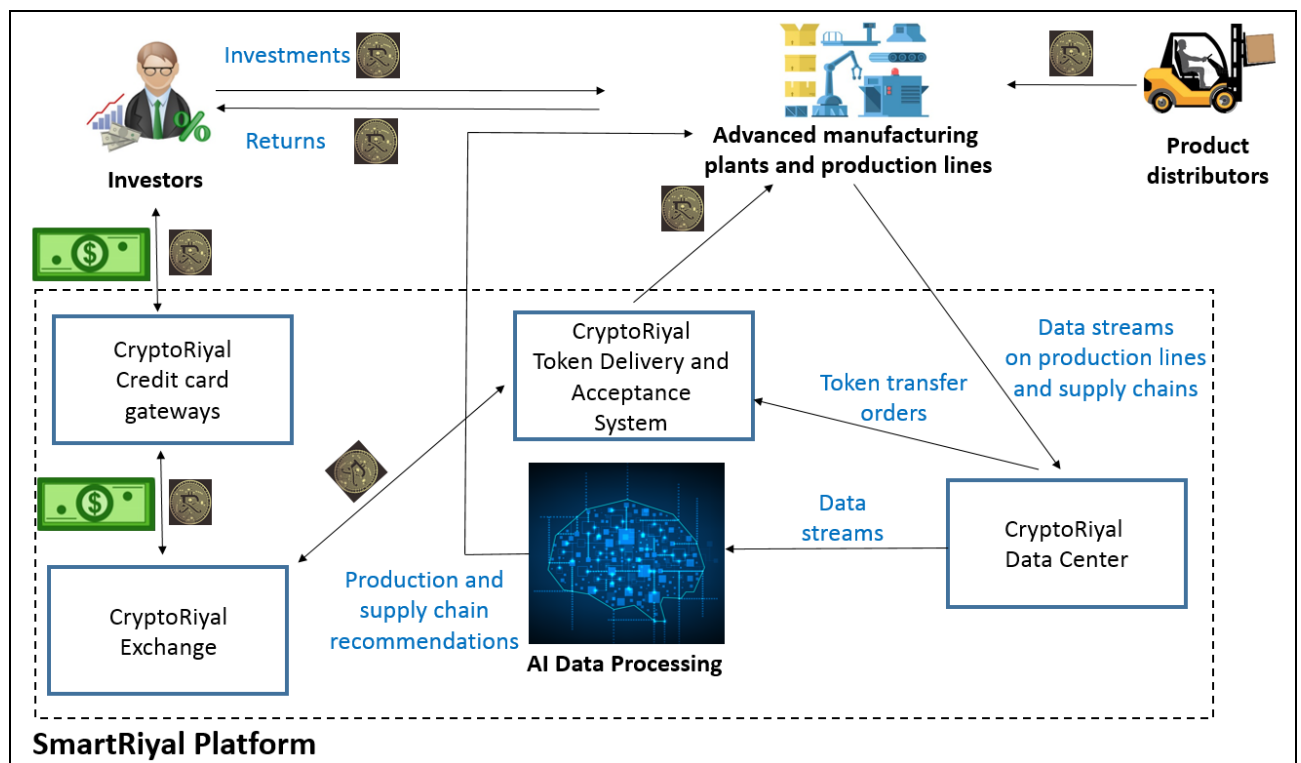
## Biotech



As the world seeks new genetic therapy, genomics, stem cell, nanobiology and bioengineering based treatments, Neom is planned to play a major role in facilitating these developments. The new city will design its regulatory framework for attracting high-tech businesses, especially in areas of biotechnology and will cater to its R&D and advanced industrial and technological needs. The city aims at stimulating innovation, where top scientists around the world will be invited to conduct research in the fields of medical science, biotechnology, human biotechnology and pharmaceuticals manufacturing.

The tokenomics of biotechnology development in Neom will work as follows: Investors will invest in acquisition of world talents and leading professionals in biotechnology and medical research and in development of clean production facilities, state-of-the-art laboratories and logistics infrastructure on the basis of the CryptoRiyal Growth strategy for investors. The products and treatments produced and sold will generate streams of income in CryptoRiyal payments from medical distributors and financial returns to investors in CryptoRiyal. The growth and prospering of the biotechnology sector in Neom and the returns paid to investors will facilitate the growth of biotechnology innovation in Neom. The growth will be supported also by the ability to analyze medical and R&D data collected from patient files and from the labs via the SmartRiyal AI system to identify efficient and innovative medical treatments and medicines.

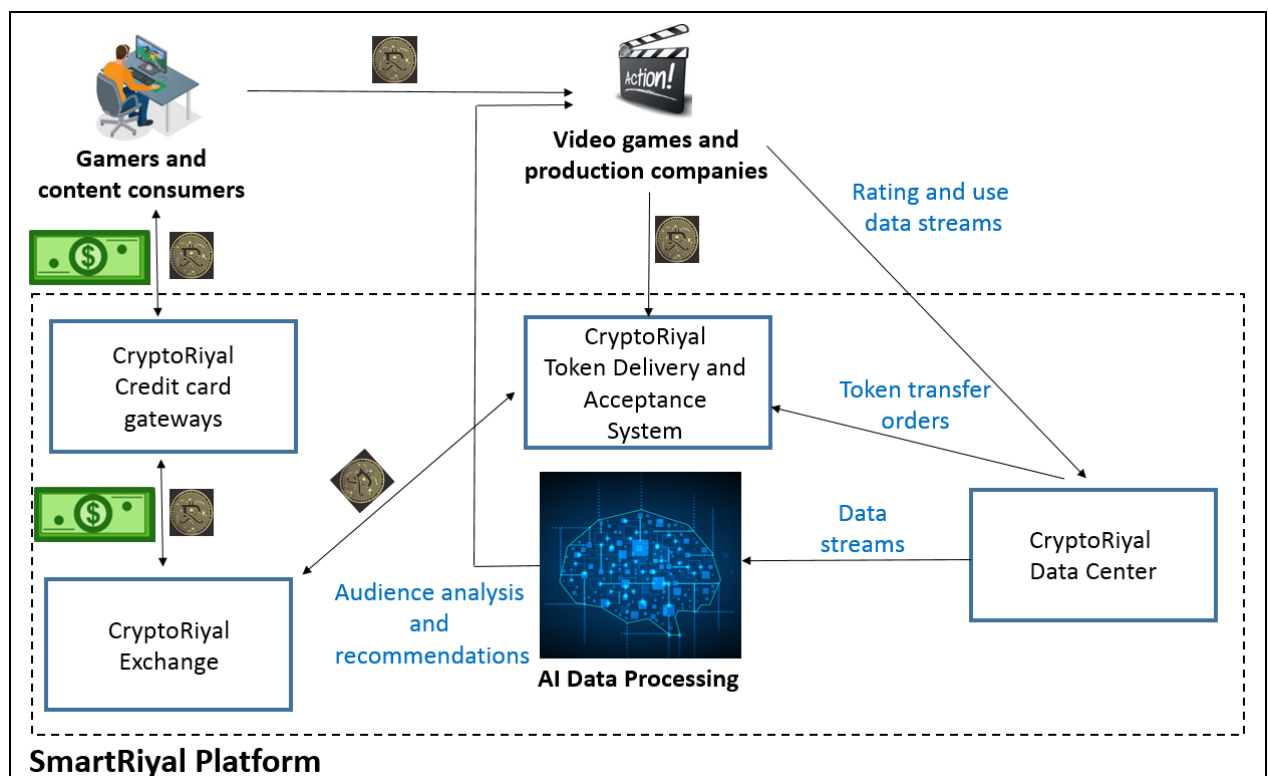
### Advanced manufacturing



There has never been a better time to produce than today when various materials and various methods and technologies for production and material processing are available. Neom could use all of this as nowhere else in the world. Neom will produce novel innovations in nanotechnology, 3D printing, sensors, IoT devices, robotics, supply chain technologies and more. Neom will also support research in related areas, such as supplies, transportation and infrastructure development. Another aspect that Neom will develop is the testing of inventions, such as personalized, fully automated transfers from point to point, passenger unmanned aerial vehicles and their perfection.

The economic dynamics of the agricultural sector is as follows: Investors will invest in fully automated and advanced production facilities that will include robotic production lines, automated delivery, automated warehouses, etc. on the basis of the CryptoRiyal Growth strategy for investors. IoT sensors will be installed on the multiple production facilities to collect the data on the performance of all the supply chain elements. The data will be transferred to the SmartRiyal data center and, in return, owners of the advanced production facilities will be rewarded with CryptoRiyal within the data-to-crypto program. They will be able to purchase CryptoRiyal Insights with production and supply chain recommendations from the AI based SmartRiyal platform that automatically processes, analyzes and learns from the data of all the production facilities that participate in the program. The product distributors will pay to the producers with CryptoRiyal tokens for their product purchases, which can be kept as tokens or converted to fiat money via the CryptoRiyal Exchange.

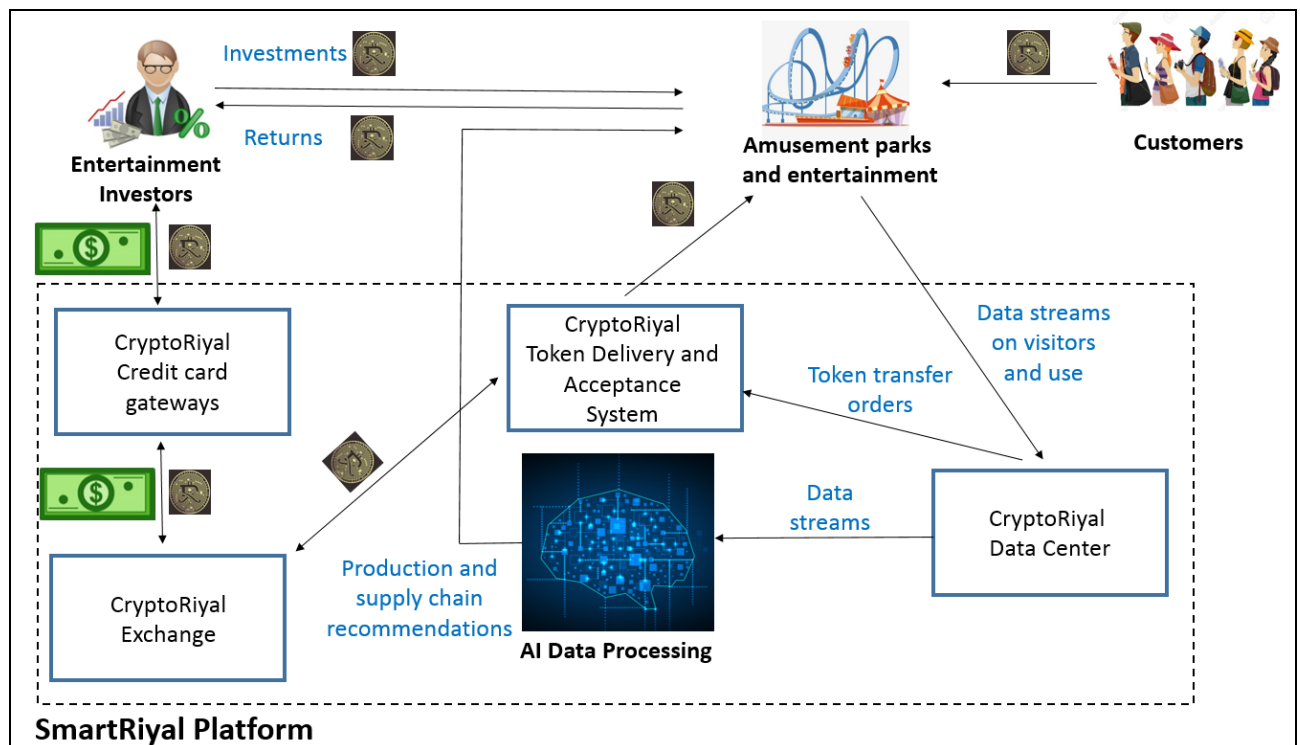
## Media



The future of media in Neom includes the development of the television and film industry, the video gaming industry and provision of new and innovative digital contents. Neom will become a media center not only for the Middle East and the Arab world, but also for the whole world. The most prominent directors will work in this city, due to its scenery location and due to great working conditions and supporting media technologies and will be welcomed with all the necessary support and infrastructure, from production houses to studios to produce, deliver and distribute films, TV, music, video games and social media at the highest level.

The tokenomics of the media sector in Neom is as follows: Production companies will be able to attract the top talents in their field by paying them with CryptoRiyal. Media productions and games will then be developed and sold, with payment received from gamers and content consumers in CryptoRiyal that can be purchased via the CryptoRiyal Exchange. Companies will be able also to share data on consumer habits and attributes and will be awarded CryptoRiyal in the data-to-crypto program. The data will be collected by the SmartRiyal and processed into CryptoRiyal Insights by the AI based system. Companies can then purchase CryptoInsights with recommendations regarding their market and the customer behavior of content consumers by paying for them with CryptoRiyal tokens.

## Entertainment



The future of entertainment in Neom includes facilities, activities, sports and cultural entertainment events, among many other exciting activities. Neom will be a place adorned at every step of sports, visual, performance and art objects. It will be a city full of elite restaurants, top entertainment parks with futuristic themes, indefinable natural parks and more, that re-define urban entertainment and relaxation. The city is planned to include the world's largest garden in its center. It will also be decorated with special water parks and swimming pools and the like forming a cultural and entertainment magnet for millions of tourists from all over the world.

The tokenomics of the entertainment sector in Neom is as follows: Investors will invest in developing sports stadiums, amusement parks, theatres, museums and other entertainment

facilities on the basis of the CryptoRiyal Growth strategy for investors. Their reward from the revenues of these facilities will be received in CryptoRiyal. Amusement parks and entertainment facilities will have automated ticketing and entrance tickets will be purchased by paying with CryptoRiyal. Additionally, entertainment facilities will benefit from the data-to-crypto program by sharing their data for the benefit of all the sector in Neom and will be rewarded with CryptoRiyal. The data will be collected by the SmartRiyal and processed into CryptoRiyal Insights by the AI based system. Companies can then purchase CryptoRiyal Insights that include recommendations about customer preferences and queuing to continuously improve these aspects of their operations.

## **Technical Overview**

### **Platform and Framework**

Blockchain is as a disruptive technology that leads both the Fintech and the information industries. By using Blockchain, companies can innovate and redesign every aspect of their financial transactions involved in business processes and fully automate them via a smart contract that defines the terms of delivery and receipt. Blockchain succeeded in revolutionizing many markets, such as capital markets, transportation and many others from a centralized structure into a decentralized market structure, since the power shifts from a limited group of investment companies and institutional investors, services providers and producers into the public at large.

One of the major uses of the Blockchain technology is the ability to issue a cryptocurrency token, as CryptoRiyal does, that can be fully secure against counterfeiting and hacking on this technological platform. CryptoRiyal is therefore a digital standard of payment that can be purchased by fiat money via a payment gateway (through a credit card), traded and exchanged back to fiat currencies. Two major conditions should exist to facilitate the use of the CryptoRiyal:

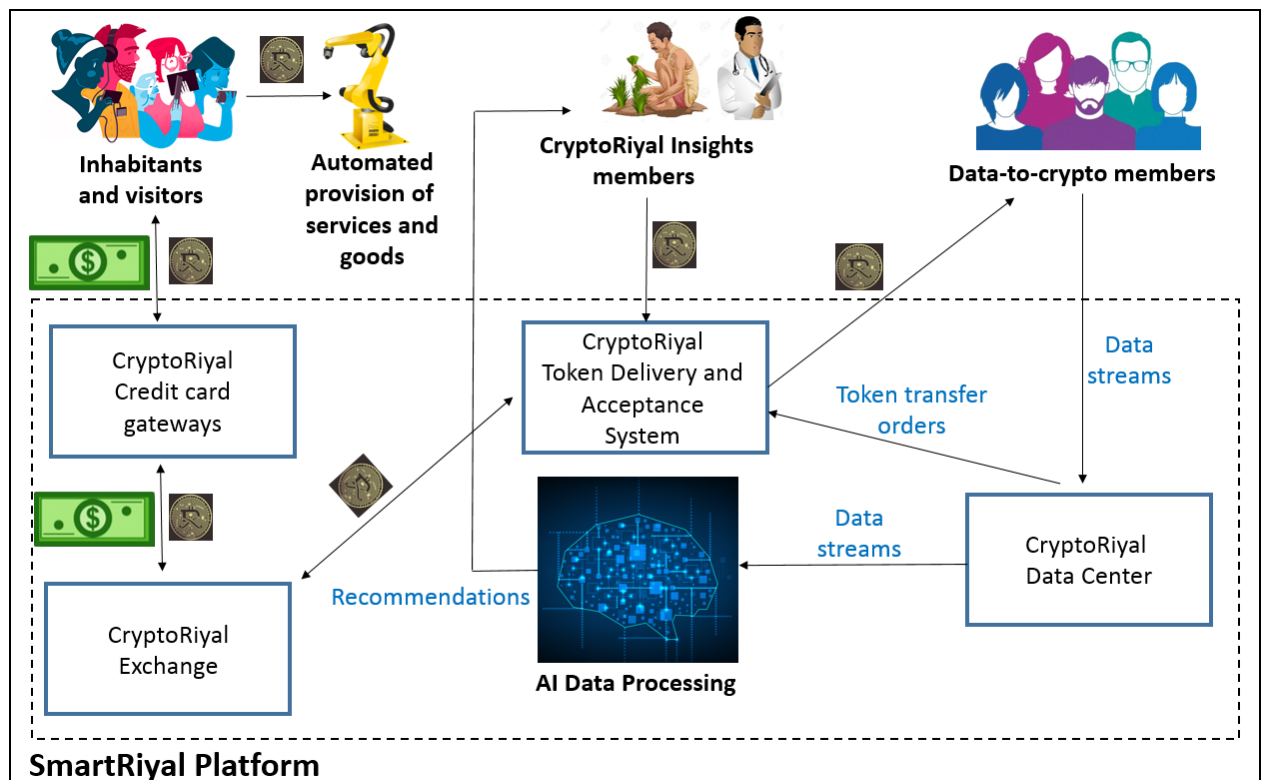
- Broad agreement among its users that they can use it as a valid financial means, receive services and goods in return to token payments, which will be possible due to the wide adoption of CryptoRiyal in Neom for any purpose associated with the city's operations.
- The CryptoRiyal cannot be subjected to fraud, such as the production of "fake" money, which is guaranteed by using the Blockchain and issuing a fixed amount of CryptoRiyal tokens that cannot be extended.

The blockchain technology succeeded in creating the technological conditions and mechanisms that support these aims. By using it, cryptocurrencies can be easily transferred and traded. Users

and holders are sure of their validity and value (as well as the protection of these currencies from hacking and counterfeiting) due to complex and sophisticated cryptographic processes and due to the distribution of information about valid tokens via the public ledgers.

## The SmartRiyal and CryptoRiyal Architecture

The architecture of the SmartRiyal platform is based on the CryptoRiyal token (CRR) that manages the transfers of tokens between wallets of users, investors and companies that operate in every sector that will be present in Neom. The platform offers multiple technical elements that will support the full automation of services and operations of the city, in particular in its defined priority sectors (see Figure 4).



**Figure 4:** The SmartRiyal platform and CryptoRiyal token mechanics

First, the SmartRiyal will operate as an ERC20 token through a smart contract on the Ether Blockchain. The token will support ERC20 crypto-wallets and its management (that is transfers and receipts of tokens from- and into the wallet) will be via a mobile application and an online platform.

Second, the SmartRiyal will operate a dedicated data center that will be aimed at collecting data from data-to-crypto members and in return will issue payment orders to the Blockchain to reward data contributors with CryptoRiyal tokens. The data transmitted to the data center will be anonymized, in order to sustain the privacy of the member. The reward will be determined on the basis of pricing models that will be developed for each sector.

Third, SmartRiyal will include IoT sensors in multiple sectors, including water and energy, agriculture, crowd control and many more to collect data within its data-to-crypto program. Data will be automatically collected and transferred into SmartRiyal's data center for further processing. The data transfer will be either mobile or via cables connected to the Internet. Fourth, the SmartRiyal will include an AI system to analyze the data and to automatically produce CryptoRiyal Insights that can serve companies and managers in each sector to improve their operations. The system will include more than 100 Machine Learning, AI and Deep Learning algorithms that will automatically be applied according to the type of data that should be processed and the statistical properties of the data (such as distribution, variance, etc.). Sixth, the SmartRiyal platform will include APIs through which automated services, production and entertainment facilities will be operated upon the completion of payment transactions with CryptoRiyal. Robots serving customers, automated warehouses issuing products, entry to transportation and amusement parks are only some of the examples of operations that will initiate services upon receipt of CryptoRiyal from customers and business partners.

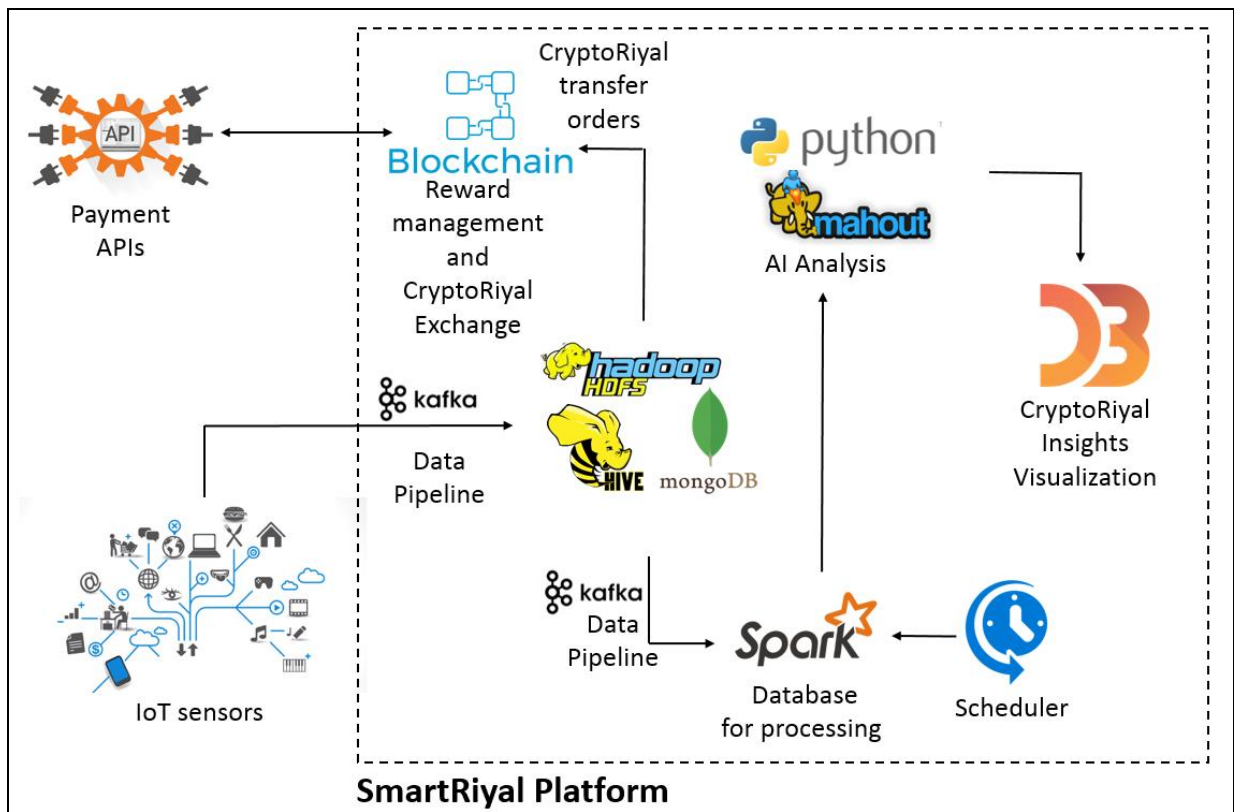
The architecture of the SmartRiyal platform is primarily based on the Blockchain, but also includes data center management components, Big Data and AI platforms that can support the wealth of its data storage and processing operations.

The data center will employ a private cloud that will enable the operation of the Hadoop framework to efficiently collect, store, manage and process data. Data from the IoT sensors will be transmitted into the databases for storage through data pipelines operated by Apache Kafka. HDFS and MongoDB will provide the database infrastructure for long-term storage of non-structure and structured data, while structured data that requires frequent access will be retrieved by SQL-Hive. The Apache Kafka will also serve for data transfer pipelines for processing on Spark for "heavy" type of data processing, such as Machine Learning and Artificial Intelligence. SmartRiyal's AI system will incorporate Mahout for more conventional Machine Learning operations. Python programs that will apply advanced Machine Learning and AI algorithms, including proprietary algorithms especially developed by CryptoRiyal's experts, will complement it. Visualizations of the CryptoRiyal Insights will then be presented by applying the D3 visualization tools and environment.

The data center will generate "reward orders" that will automatically transfer tokens from the CryptoRiyal's wallet to the wallets of data-to-crypto members based on the data that they shared. The Blockchain's ledger will accordingly update the remaining amounts in the sending and receiving wallets.

(See the SmartRiyal architecture in Figure 5)





**Figure 5:** The SmartRiyal architecture.

## ICO Roadmap

### CryptoRiyal's Roadmap

Whitepaper – August 2018

Smart contract implementation – August 2018

Website and online platform – September 2019

Private presale and pre-ICO - XXX 2018

ICO crowd sale - XXX 2018

End of the ICO – XXX 2018

Release of the SmartRiyal platform – XXX 2018

Release of the mobile application – XXX 2019

Deployment and operation of the data center – XXX 2019

Completion of the APIs for automated service provision – XXX 2019

Completion and market release of the IoT sensors – XXX 2019

Completion of SmartRiyal's AI system – XXX 2019

CryptoRiyal's Hardcap is XXX million USD (approx. XXX ETH) and our Softcap is XXX million USD (approx. XXX ETH). The stages of our private sale, pre-ICO and ICO are listed as follows:

The CryptoRiyal private sale will begin on XXX XXX, 2018 and will continue until the end of the ICO. The private sale will a XXX% bonus for private sale purchases of over XXX USD per purchase and will provide XXX% of the total number of CryptoRiyal tokens that are planned to be minted (XXX million tokens) at the following rate:

1 USD (or its equivalent in BTC or ETH) = 19 CRR tokens, representing a XXX% bonus

The CryptoRiyal pre-ICO sale will take place between XXX XXX, 2018, at 12:00 PM CET and XXX XXX, 2018, at 12:00 PM CET. The pre-ICO will offer XXX% bonus for pre-ICO buyers on XXX% of the total number of CRR tokens that are planned to be minted (XXX million tokens). Purchases of more than 100 USD can be made in BTC, ETH or via credit card purchases according to the following rate:

1 USD (or its equivalent in BTC or ETH) = XXX CRR tokens, representing a XXX% bonus

The CryptoRiyal ICO crowd sale will begin on XXX XXX, 2018, at 12:00 PM CET and will last until XXX XXX, 2018, at 12:00 PM CET, offering XXX% of the total number of CRR tokens that are planned to be minted (XXX million tokens). Purchases can be made in BTC, ETH or via credit card purchases according to the following rate:

1 USD (or its equivalent in BTC or ETH) = 14 CRR tokens, without a bonus

XXX% of the tokens (XXX million tokens) will be dedicated to CryptoRiyal's team to proceed in developing the token, the platform and the data and mining center, and XXX% of these tokens will be locked for one year. This amount will also be used to foster the widespread recognition of the CRR token by allocating XXX% of the tokens (XXX million tokens) to advisors. An additional XXX% of the tokens (XXX million tokens) will be allocated to pre-ICO and ICO marketers and promoters to support the reputation of the CRR token and CryproRiyal.

## Purchasing Tokens via Fiat Money Transfers

The mode of token purchase is through cryptocurrency transfers of BTC and ETH due to lower costs and the duration of completing the transfer through banking systems. Participants are advised to use one of the cryptocurrency exchanges to convert fiat money into BTC or into ETH. Alternatively, participants can purchase tokens through the use of a credit card in our website. Please follow the detailed instructions for ICO transfers in BTC, ETH or credit card payments on our website.

## The CryptoRiyal Team and Advisors

CryptoRiyal's executive team is led and managed by Bander Alotebi and by ???, highly experienced professionals in the field of information technologies and cryptocurrency trading.

CryptoRiyal's team members are:

??? – CEO (?)

<<< COMPLETE LIST >>>

## Legal Considerations (better check this with your lawyer)

CRR tokens are the only functional tokens intended to be used to compensate CryptoRiyal for the use of its platform, data center and services. CRR tokens will give token holders and users access to the CryptoRiyal and SmartRiyal platform. CRR tokens are not for speculative investment. No promises regarding value or future performance are made regarding CRR tokens. No promises regarding any particular value of CRR tokens are made. No other rights associated with holding CRR tokens are given. Proceeds of the token sale may be spent as the company sees appropriate, which may change as deemed necessary in the maturation and advancement of CRR tokens.

Our team is investing heavily in the safety and security of the services CRR provides. However, we cannot protect against all possible sources of error and malicious deeds initiated by any party. Therefore, all risks assumed by using the CryptoRiyal and SmartRiyal platform in any capacity, including transferring, receiving, and accumulating CRR tokens, are solely assumed by the user. CRR tokens are meant to be held and used by those who are experienced and knowledgeable in cryptographic tokens, their acquisition, transfer, and use only for the purpose of accessing the services offered on the CryptoRiyal and SmartRiyal platform.

CryptoRiyal and its team must abide by the laws set forth in its operational country(ies). We intend to provide our services in as decentralized a fashion as reasonably feasible, but our legal entity must act according to the rules and bounds encoded in applicable laws. That includes but is not necessarily limited to laws governing financial operations, employment, fee charging, and sales.

## References

- Karasik, T. ( 2017). Russia's Financial Tactics in the Middle East.
- Verdeil, E. Energy Transition and Urban Governance in the Arab World. Eckart Woertz.  
"Wise Cities" in the Mediterranean? Challenges of Urban Sustainability, pp.93-102,  
2018, 978-84-92511-57-0.
- Wood, G. (2014). *Ethereum: A secure decentralised generalised transaction ledger*.  
Ethereum Project Yellow Paper.  
<http://www.arabnews.com/node/1349021/saudi-arabia>  
[http://www.neom.com/content/pdfs/NEOM\\_BROCHURE\\_RGB\\_100073132\\_LDN.pdf](http://www.neom.com/content/pdfs/NEOM_BROCHURE_RGB_100073132_LDN.pdf)  
[http://www.neom.com/content/pdfs/NEOM\\_FACT\\_SHEET\\_RGB\\_100073132\\_LDN.pdf](http://www.neom.com/content/pdfs/NEOM_FACT_SHEET_RGB_100073132_LDN.pdf)  
[http://www.neom.com/content/pdfs/NEOM\\_FAQS\\_ENGLISH.pdf](http://www.neom.com/content/pdfs/NEOM_FAQS_ENGLISH.pdf)  
[http://www.neom.com/content/pdfs/NEOM\\_INFOGRAPHIC\\_RGB\\_100073132\\_LDN.pdf](http://www.neom.com/content/pdfs/NEOM_INFOGRAPHIC_RGB_100073132_LDN.pdf)  
[http://www.neom.com/content/pdfs/NEOM\\_press\\_release\\_English\\_2017.10.24.pdf](http://www.neom.com/content/pdfs/NEOM_press_release_English_2017.10.24.pdf)  
<https://jamestown.org/wp-content/uploads/2017/12/Ted-Karasik-WS2-Finance.pdf>  
<https://www.arabianbusiness.com/technology/396275-saudis-500bn-neom-to-pioneer-new-age-in-mobility-says-ceo>  
<https://www.bloomberg.com/graphics/2017-neom-saudi-mega-city/>  
[https://www.huffingtonpost.com/entry/neom-and-saudi-arabias-futuristic-ambitions\\_us\\_59fa1e44e4b01ec0dede3f24](https://www.huffingtonpost.com/entry/neom-and-saudi-arabias-futuristic-ambitions_us_59fa1e44e4b01ec0dede3f24)  
"What does Saudi Arabia's mega project 'NEOM' actually stand for?". Alarabiya. 24 October 2017.