

Africa Development Block Chain Foundation PTE. LTD.

Africa Development Chain

White Paper

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Along with deepening reform and expanding openness to the outside world, China has closer cooperation and exchanges with other regions and countries, at higher level, in wider range and with greater depth. Among China's external exchanges, China-Africa cooperation is surely a highlight attracting more and more attention. Then, how can Africa seize the gaze of the Chinese government and Chinese enterprises?

1 An Overview of Africa

1.1 Civilization on the African Continent

Africa is located in the eastern hemisphere, in the east to the Indian Ocean, in the west the Atlantic Ocean, and stretches across the equator. It has a land area of 30.2 million square meters, 20% of the earth's total, and thus being the second largest continent. It is also the continent with the second largest population only next to Asia. With a vast plateau landscape, it is named "the plateau continent", and its plains are mainly in the coastal line.

Africa is a continent that ever witnesses the trace of Australopithecus sediba, Dryopithecus, Ramapithecus, homo habilis, homo erectus and homo sapiens. Anthropologists discovered in Africa the earliest fossil of homo habilis, which inspired the hypothesis that Africa was the birthplace of mankind.

African people have created splendid civilizations. The Nile Valley is one of the cradles for ancient world civilization, and Egypt, in the lower reach of the Nile River, is among the list of the four great ancient civilizations. As early as five thousand years ago there was already agriculture in Egypt, and the Egyptians not only learned farming, built water conservancy and created the solar calendar, but also made marvelous achievements in architecture, sculpture, painting and other art forms. The pyramid and Sphinx near Cairo are architectural miracles and the symbol of the wisdom and diligence of the ancient Egyptians.

In the middle reach of Nile River where the Sudan locates, in the 16th century there arose the Kusch Empire, one of the world's most prosperous countries in the ancient times with developed agriculture, ironmaking and textile industry. Its capital is the largest ironmaking center in south of the Mediterranean, and was named by western archaeologists as "ancient African Birmingham".

Northern Ethiopia was an important center of ancient African civilization. There, the Aksum Kingdom arising in around the first century embraced its golden era in the fourth century, with gold, silver and copper used in commercial activities. The written system created by the kingdom is still in use today, and the 60-foot Aksum stone tablet and the Rock-hewn Churches of Lalibela are African wonders known by the world.

The Berbers living in Maghrib since the ancient times were engaged in farming from the late Neolithic age. They built up water conservancy facilities, made bronze articles as early as in 500 BC, and had formed the kingdoms Mauritania and Numidia, with a large number of rock arts.

In around 2000BC, Sub-Saharan residents began hunting, gathering wild plants and domesticating animals and plant crops. There are more than 250 crops in the world are originated in sub-Saharan Africa. West Africa is the birthplace of most African agriculture, and sorghum and oil palm are the inherent product of this area. Statues and cave paintings in the Sahara Desert are portraits of west Africans' grazing and then rural life.

West Africa began to see refined potteries a few thousand years BC, and after it entered into the iron age around the 3rd century BC, it witnessed strong empires such as Ghana, Mali and Songhai. In central and southern Africa, remains of iron age can often be seen, so are the ancient terraces and irrigation engineering sites. The ruins of Engaruka City with thousands of houses and the stone architecture of Zimbabwe built in about 500AD are signs of ancient civilization in South Africa. In central and South Africa there also once appeared some famous countries, such as Monomotapa with developed agriculture, mining industry and foreign trade, Congo with a highly centralized system, Kuba with high-level sculpture art, and Buganda with refined social division of labor. On the east coast of Africa in the Indian Ocean, there has always been prosperous trade, especially iron and salt in early ancient times. In the early 15th century, the east coast of Africa was already able to send envoys to visit China.

Africa is not "the place of lion" as some western scholars described, but a continent with splendid civilization ever in the ancient times. Africa has made a major contribution to the development of world civilization.

1.2 Natural Resources in Africa

1.2.1 Minerals

Africa boasts a variety of mineral resources and reserves, such as oil, natural gas, iron, manganese, chromium, cobalt, nickel, vanadium, copper, lead, zinc, tin, phosphate, gold, diamond and uranium. Many mineral reserves are among the world's top. Oil in the Sahara area accounts for 12% of the world total, and the oil production in Nigeria, Algeria, Libya, Angola and Egypt accounts for more than 80% of Africa's total. Countries with oil reserve include: Nigeria, Algeria, Libya, Angola, Egypt, Benin, Gabon, Equatorial Guinea, the Republic of Congo, Cameroon, Cote d'Ivoire, Sudan, Tanzania, Tunisia, etc.

Chromium and manganese ore reserves in Africa take up 83% and 91% respectively of the world total. Platinum and palladium are mainly found in South Africa, chrome ore in South Africa and Zimbabwe, and manganese ore in South Africa and Gabon. The Democratic Republic of the Congo's diamond production ranks top across the globe, Atlas is one of the world's three major phosphate origins, and South Africa's gold output is the world's No.1. Gold deposits are mainly distributed in South Africa, Ghana, Zimbabwe, the Democratic Republic of the Congo, Tanzania and Mali. Phosphate is mainly discovered in Morocco, and cobalt in the Democratic Republic of the Congo and Zambia. Equatorial Guinea's bauxite reserve accounts for 27% of the world total. Uranium is mainly located in South Africa, tantalum ore in Mozambique, graphite in Madagascar, and alumina in Guinea, Ghana, South Africa, Botswana, Zimbabwe, Guinea-Bissau etc. The Congo basin outer area is the main deposit of metallic ore, and copper mines in Zambia and the Democratic Republic of the Congo are famous for large reserves and high grade. West Africa is abundant in iron ore and bauxite, Liberia is known for its iron ore, and Guinea possesses the largest bauxite reserve in the world.

1.2.2 Plants

There are at least 40,000 species of plants in Africa, and the forest area takes up 21% of the total. Such trees of economic value include mahogany, blackwood, rosewood, copal tree, ebony, camphor tree, katus, yellow lacquer wood, cork oak and walnut.

1.2.3 Others

The vast prairie area takes up 27% of the total area of Africa, a number larger than that of other continents. Hydropower resources is abundant, and famous tourism resources include the African savannah, the pyramids of Egypt, South Africa, the Sahara Desert, Morocco, etc.

1.3 Africa's Economy

Mining and light industry are the main sectors in Africa. The production of gold, diamond, iron, manganese, apatite, bauxite, copper, uranium, tin, oil and so forth occupies an important position in the world. Light industry mainly includes agricultural and husbandry product processing and textile. Wood industry have a solid foundation, with a large number of lumber plants. Heavy industry mainly includes metallurgy, machinery, metal processing, chemical and cement, marble, diamond cutting and polishing, rubber etc.

Agriculture occupies an important position in in African countries' national economy, and serves as the economic backbone. Africa's food crops are rich, including wheat, rice, maize, millet, sorghum, potato, etc., as well as specialties like cassava, plantain, date, taro and banana. The continent's cash crops, especially tropical cash crops, occupies an important position in the world, and the output is large, such as cotton, sisal, peanut, oil palm, cashew nut, sesame, coffee, cocoa, sugar cane, tobacco leaf, rubber, clove, etc. Frankincense, myrrh and alpha grass are endemic in Africa. Animal husbandry develops rapidly, and fishery resources are rich, with the Atlantic Ocean as one of the world's fishery areas and fishing boats from Europe, Japan and South Korea traveling among the vast waters. The cold current running through south Angola, Namibia and South Africa brings shoals of fish and busy fishing boats. Africa has more than 130 km highway, about 78,000 km railway and 52,000 km inland river navigation mileage.

Africa is one of the world's continents in dire need of development. However, for a long time the development of Africa has experienced serious inequality. As the origin of cheap raw materials of developed countries, the region faces single industrial structure, strong dependence, deteriorating external economic and social development conditions and lack of endogenous power.

In recent years, the overall annual economic growth rate of Africa reaches 5.8%,

higher than the 3% of the global average. Such a growth speed attracts worldwide attention, and this cannot be achieved without China's assistance. The world-famous consulting firm McKinsey claimed in a report that "China has created millions of jobs on the continent of Africa, and nearly two-thirds of Chinese companies provide skills training."

2 China-Africa Cooperation

2.1 Development of Bilateral Relations

According to research, during Zheng He's trip to Africa, due to accident sailors on one ship of his fleet had to landed onto East Africa, and stayed owing to limited transportation and communication conditions. The crew then lived there in harmony with the locals. After hundreds of years, their descendants still bear some physical characteristics of the Chinese people, as well as the work habits.

In the middle of last century, the first leadership of the People's Republic of China, together with the earlier generation of African leaders, ushered in a new epoch of China-Africa relations. Since then, the Chinese and African peoples have been supporting and cooperating each other in the causes of independence and development.

In the 1970s, to support the liberation cause of the South African countries and to break the apartheid blockade, the Chinese people, despite their own difficulties, assisted in the construction of the Tanzania-Zambia Railway.

In November 2006, the then Chinese premier put forward five suggestions on the comprehensive improvement of China-Africa cooperation: first, expand the scale of China-Africa trade; second, strengthen China-Africa cooperation and investment; third, enhance aid to Africa; fourth, promote cooperation between enterprises of the two sides; and fifth, strengthen the cultivation of talents.

In February, 2007, President Hu put forward three expectations on Chinese companies in Africa: bear in mind the mission and take into account the general situation; insist on the supremacy of credibility and quality; promote harmony and benefit the people.

In November 2009, Premier Wen pointed out the development direction of China-Africa relations under the new situation and the key areas, and announced the

eight new measures for cooperation with Africa, involving agriculture, environmental protection, investment expansion, debt relief, market access enlargement, climate change solution, health care and education.

In 2013, President Xi visited Africa shortly after his assumption of duty, and put forward the concept of cordial and sincere China-Africa partnership and the correct idea of morality and profit, and solemnly announced that China will always be a reliable friend and sincere partner of African countries. In December 2015, he paid another visit to the region, and put forward the “five pillars” and “ten major plans” for China-Africa cooperation during the Johannesburg Summit.

On June 9, 2017, the stewards first got onboard the Mombasa-Nairobi Standard Gauge Railway. With a length of 480 km, the railway was formally opened on May 31, 2017, and passenger service began on June 1, shutting between Mombasa and Nairobi twice a day.

On July 21, 2018, following a state visit to the United Arab Emirates President Xi paid a state visit to Senegal, Rwanda and South Africa, attended the 10th BRICS leaders meeting held in Johannesburg, and then paid a friendly visit to Mauritius during his transit. This was his fourth trip to Africa after taking office and his ninth visit to the continent.

On September 3-4, 2018, the Forum on China-Africa Cooperation summit was held in Beijing.

Friendship between China and Africa enjoys a long history and a solid foundation. China and Africa have similar historical experiences, always rendered sympathy and support to each other in the struggle for national liberation, and have forged a strong friendship. The establishment of the People’s Republic of China and the independence of African countries ushered in a new era of China-Africa relations. During the half a century, the two sides are close in political link, with frequent high-level visits and personnel exchanges, rapidly developing economic and trade relations, fruitful cooperation in other fields, and increasing consultations and coordination in international affairs. China provides possible aids to African countries, and African countries also offer China strong support. Sincere friendship, equality and mutual benefit, solidarity and cooperation, common development are the principle of China-Africa exchanges and cooperation, as well as a driving force for long-lasting China-Africa relations.

2.2 Bilateral Cooperation Focuses

China and Africa are cradles of human civilization, and the two boast time-honored exchanges, deep friendship and enhancing cooperation. At present the bilateral relations have entered into a fast track of overall development, and the Belt and Road keep abreast with China-Africa partnership. The successful Beijing Summit of the Forum on China-Africa Cooperation in September 2018 highlighted the position of China-Africa relations in the construction of the Belt and Road, and promote bilateral cooperation of higher quality, higher level and wider areas.

Time-honored relations closely connected with the Belt and Road Initiative

Africa is one of the important directions in the construction of the Belt and Road. The four visits of Zheng He to Africa during his voyages contributed to the peak of China-Africa relations in the ancient times, and composed a magnificent chapter in the Maritime Silk Road. Zheng's fleet carried on a lot of gold, silver, silk, porcelain and tea, and conducted fair and equal trade with African countries in exchange for ambergris, ivory and other local specialties, promoting the fair and complementary trade between China and Africa. Relying on the trade network of marine transportation center, maritime trade base and trade headquarters, Zheng's voyages to Africa encompassed East Africa into the Maritime Silk Road trading system, strengthened the status and function of east African countries in the Maritime Silk Road, promoted marine transportation and trade between Asia and Africa, and demonstrated the international significance and influence of the Maritime Silk Road. It can be said that the direct trade between China and Africa has an early start, and today's China-Africa trade and cooperation and Africa's "Look East" are the continuation and development of the time-honored China-Africa trade.

Bilateral cooperation upgraded and transformed, and Belt and Road construction embraces good harvests

After Zheng He's voyages, western colonists dominated the world's oceans, and direct exchanges between China and Africa was blocked. It was not until the formal establishment of diplomatic relations between China and Egypt in 1956 that a new era of China-Africa relations was opened. For a long time, China's selfless assistance to Africa, from building projects and sending medical teams and peacekeeping forces, to the training of talented people, reflects the Chinese people's friendship for the African people.

During the long history of friendly exchanges between the two sides, the four

visits of Zheng He to Africa was the top of ancient China-Africa relations, China's assistance in the construction of the Tanzania-Zambia Railway and the Mombasa-Nairobi Standard Gauge Railway and the Forum on China-Africa Cooperation are the peak of modern China-Africa friendship. The Tanzania-Zambia Railway in under financial and technical assistance of China, and was built under cooperation among the three countries. During the construction, people of the three countries overcame various hardships and completed in advance with high quality the project deemed as impossible by some western countries.

Since China's reform and opening up, China-Africa relations witness continual and healthy development, and the investment, construction and operation of the Mombasa-Nairobi Standard Gauge Railway is an example. It was a flagship project of the accurate synergy of China's Belt and Road Initiative and Kenya's 2030 Vision and the African Union's 2063 Agenda. The co-building of the Belt and Road by China and Kenya will boost east Africa's trade and investment liberalization and facilitation, and promote the region's economic and social development from coastal areas to inland and from the lake to the surrounding, thus forming a new development pattern of land and sea synergy and complementarity between the east and the west areas.

China-Africa relations promote construction of the Belt and Road and benefit the people

China is the biggest developing country, while the African continent has the most developing countries, hence China-Africa cooperation possesses a sound foundation and broad prospects. The Forum on China-Africa Cooperation is an important platform for the development of bilateral relations. In 2000, the first ministerial meeting of the Forum on China-Africa Cooperation was held in Beijing, which determined the direction for the development track of institutionalization of China-Africa relations and for the two sides to develop a long-term, stable, equal and mutually beneficial new partnership. It is our first platform for dialogue with other developing countries, and the first cooperation mechanism facing a continent. The forum upholds equal consultation, mutual understanding, broader consensus, stronger friendship and further cooperation, and has been successfully held three summits and seven ministerial conferences, strongly improving bilateral cooperation with greater depth and higher level. China-Africa trade jumped from \$10.6 billion in 2000 to \$204.19 billion in 2018, and China has been Africa's largest trading partner for many years.

In September 2018, the Beijing Summit of the Forum on China-Africa

Cooperation was held successfully, which centered around cooperation with people in the core, paid more attention to African countries demand for development and African people's common wish, put forward the eight major actions to be jointly conducted in the next three years and in the longer future: industrial promotion, facility connectivity, trade facilitation, green development, capacity building, health and sanitation, cultural exchanges, and peace and security, further promoting China-Africa Cooperation to a faster pace and into comprehensive, balanced and sustainable development. The eight actions cover the traditional areas of advantage in China-Africa Cooperation, expand new room for cooperation, and form a complete system of cooperation. To promote the smooth implementation of the eight actions, China provides Africa with an aid of \$60 billion, in the forms of government aid, investment and financing by financial institutions and enterprises. Along with the docking of the Belt and Road construction with the 2063 Agenda of the African Union and development strategies of African countries, China-Africa friendship and cooperation will certainly show infinite vitality in the new era.

2.3 Major Achievements in China-Africa Cooperation

Through forty years of reform and opening up, China has led its large-scale population out of poverty, and its economic miracle, as the largest developing country, brings inspiration and confidence to Africa and impetus for the bilateral cooperation. Over the past two decades China has become Africa's largest economic partner, and now is Africa's largest trading partner, infrastructure financing and foreign investment source and the third largest aid provider.

According to official Chinese statistics, from the point of infrastructure construction, the roads Chinese enterprises build in Africa are about 30,000 kilometers, the new transmission lines are more than 30000 kilometers, and the increased power generation capacity is 20,000 mw or so. From the point of capacity cooperation, Chinese enterprises have built 25 economic and trade cooperation zones in Africa, with more than 400 enterprises stationed in the zone, an accumulated investment amount of more than \$6 billion, a taxation of more than \$ 900 million paid to the host countries, and over 40,000 foreign employees hired, which directly promoted the industrialization of Africa. From the point of trade development, in 2000 the trade volume between China and Africa only totaled \$10 billion, in 2017 the number increased to \$170 billion, and in 2018 it continued to increase to more than

\$200 billion. From China's investment in Africa, the investment flow in 2000 was only \$200 million, in 2017 it increased to \$3.1 billion, and at the end of the year the number of all kinds of investment stock reached more than 100 billion dollars.

On the June 4 press conference held by the State Council Information Office, Deputy Commerce Minister Qian Keming introduced the economic and trade cooperation between China and Africa. The deputy minister pointed out that since the eighteenth National Congress, especially the Beijing Summit of the Forum on China-Africa Cooperation, the Ministry of Commerce sticks to the notion of sincerity and affinity and the correct concept of morality and profit, implements the ten cooperation plans made on the Johannesburg Summit with China and Africa co-building the Belt and Road at the center, executes the eight actions, and promotes China-Africa economic and trade cooperation to all directions, multiple levels and a wide range. The major fruits of all the work include the following aspects:

First, stable and promising trade cooperation. China-Africa trade volume in 2018 reached \$204.2 billion, up by 20% from a year earlier, and China has been Africa's largest trade partner for ten years. At the same time, trade structure keeps optimizing, and the trade volume of mechanical, electrical and high-tech products takes up 56% of China's total trade with Africa. In the meanwhile, non-resource products China imports from Africa is also increasing significantly, a year-on-year increase of 32%, among which agricultural product import increased by 22%.

Second, numerous highlights in infrastructure cooperation. Chinese enterprises actively participate in infrastructure projects in Africa, and in recent years have conducted a large number of projects in rail transportation, ports, aviation, electric power and other fields, in this way made important contributions to the connectivity in Africa and accelerated the introduction of Chinese technology, equipment, standard and services to Africa. The Ministry of Commerce also actively guides Chinese enterprises to transfer to the integrated model of investment, construction and operation, enhance project "generation" function and reduce financial pressure on the country where the project is carried out.

Third, in-depth fusion of industry investment. By the end of 2018, China had set up more than 3,700 enterprises in Africa, with a direct investment stock more than \$46 billion for the whole industry. Overseas cooperation zones have become one important platform in China's investment in Africa, which accelerates the growth of China's investment in the industry chain integration, gradually unveils the industrial agglomeration effect, forms industrial clusters such as manufacturing equipment, light

industry, textile and home appliances, and enhances the local's industrialization level, industrial supporting and foreign exchange earning ability.

Fourth, emerging areas for cooperation. Chinese financial institutions have set up more than 10 branches in Africa. Eight countries including South Africa have included RMB into foreign exchange reserves. China has also established the RMB clearing arrangement with Zambia, and signed with 4 countries such as Morocco currency swap agreements. New industrial form cooperation also increases quickly, such as cross-border e-commerce. Still, China is building e-commerce cooperation mechanism with countries such as Rwanda, and Alibaba and Rwanda's government have announced to jointly build Africa's first electronic trading platform.

3 Block Chain Boosts New Growth in Africa

In the past two years, block chain has become a popular word in China and even the whole world, attracting more and more attention and arousing explorations of government organs on policy and enterprises on application. In the 13th Five-Year National Informatization Plan issued by the State Council in December 2017, block chain was listed together with quantum communication, artificial intelligence, virtual reality, cognitive analysis of big data, unmanned vehicle technology and so forth as China's "major tasks and key projects" during the 13th Five-year Plan period, and enterprises were encourage to try innovative application of block chain. It can be said that though there is not yet an agreement worldwide on the applications of the technology, let alone relevant industry standards, the general direction is sure, that is: block chain technology will only see more and more applications, and all countries are trying to seize the emerging digital economy new height, and companies are looking for market opportunities. Therefore, there is reason to believe that, in the various fields of China-Africa Cooperation, it is also possible to apply the block chain technology to promote bilateral cooperation.

3.1 About Block Chain

3.1.1 Nature and Features of Block Chain

Essentially, block chain is a distributed database, a data block chain in time order,

a tamper-resistant and unforgeable distributed ledger with cryptography. Each block contains the corresponding trading information, used to verify the validity of the information and generate the next block.

The uniqueness of block chain lies in its several characteristics:

1. Decentralization. Its system has no centralized hardware or management institution, and the data blocks are safeguarded by nodes of the whole system, thus avoiding fraud.

2. Openness. Except for the private information of the dealing parties, the block chain data and relevant applications can be retrieved by anyone through a block chain data browser, hence information in the whole system is highly transparent.

3. Autonomy. Specifications and norms based on consensus and agreement, namely open and transparent algorithm prevents any human intervention.

4. Tamper resistance. Once the information is validated and added to the block chain, it will be permanently stored. Unless more than 51% of the nodes are controlled at the same time, otherwise changes to the database on a single node is invalid. Yet due to the large number of nodes, it is impossible to tamper the transaction records, thus ensuring high data stability and reliability.

5. Anonymity. Because the exchange between nodes follow fixed algorithms and the rules in the chain will judge themselves whether an activity is effective or not, a party of the transaction does not need to disclose its identity to can get trust of its counterpart, which is helpful to the accumulation of credit.

To sum up, the advantages of block chain technology rest on that it does not rely on a specific agency, and the data recorded on the chain cannot be tampered and yet can be inquired by anyone while protecting privacy of the transaction parties. can query, and also can protect the privacy of both parties. Such advantages also cause people to think: are there greater possibilities for such amazing technology? And that is why in a few years we see a variety of block chain projects popping up.

3.1.2 Main Applications of Block Chain

In consideration of the current mainstream projects, block chain applications can be divided into four categories:

The first category is the cryptocurrencies, also the earliest application, with bitcoin as the representative. The cryptocurrencies mainly act as a “medium of exchange” for the block chain assets, similar to a universal equivalent in commodity exchange. At

present there are over two thousand kinds of cryptocurrencies, and bitcoin still takes up the largest market share, about 55%.

The second category includes various technical platforms, the major function of which is to satisfy the development needs, and the share of which account for 18% of the total digital asset market.

The third kind is the applications, namely projects as solutions to various sectors of the real economy, covering finance, social contact, games, property rights protection, medical records, proof of identity and many other fields. It is the fastest growing sector, and accounts for 22% of the total market value.

The fourth class is tokenized assets, namely block chain assets pegged physical assets such as gold and dollars, the representative of which is USDT and the share of which is about 5%.

3.2 Africa Development Block Chain Foundation PTE. LTD.

3.2.1 About the Foundation

Africa Development Block Chain Foundation PTE. LTD. is an organization founded against the backdrop of China-Africa friendly cooperation, which aims to promote bilateral cooperation at various levels via block chain technology, and help African countries, especially the least developed countries such as Tanzania in infrastructure, Internet construction, tourism resource development, health care and so on.

The main chain launched by Africa Development Block Chain Foundation PTE. LTD. is called Africa Development Chain, and the corresponding token is ADC. In line with the features and functions of block chain, ADC is mainly used in the following areas:

1. Payment and international settlement. ADC can be pegged to some mainstream international currencies and serves as a means of payment circulating in African countries, as well as used in China-Africa trade, in order to simplify the exchange rate calculation between different currencies and international payment delay.

2. Medical records. Africa's medical and health conditions at present stage still needs further development. By introducing the block chain technology, health information of the African people can be uploaded onto the chain for instant retrieval

to speed up the diagnosis.

3. Source tracing of agricultural and mineral resources. Some popular African products, such as mahogany and diamond, are in high speculation in China, and thus often with fakes. If apply the block chain technology, it is able to verify in each link, from the production place, the transportation process to the market circulation, thus putting an end to fraud.

4. Used in commodity circulation within the African Union members and between Africa and China, to further promote the connectivity of logistics, finance and other aspects.

4 Technical Principle of ADC Chain

4.1 ADC Systematic Architecture Design

- Layered design, decouple the kernel layer, component layer, platform layer and application layer;

- Minimize block chain kernel, and solve problems on this layer;

- Main and side chains, all built-in and extended subsystems in a single sub-chain and isolated from each other;

- Extend smart contract, define consensus mechanism through the smart contract, and introduce algorithms such as quantum attack resistance and zero knowledge proof to enhance the security of smart contract;

- Compact single chain, and tackle problems such as data redundancy;

- Introduce virtual machine and design a compound consensus mechanism.

4.2 Current Block Chain Systems

- General block chain problems

1. For applications such as food source tracing, logistics tracking, bank bills maintenance and multi-time node payment, the design with cover their common features. Yet for specific fields, there are still some problems;

2. Just use block chain as a DB, and the business logic is completely separated with the block chain, thus failing the atomicity of business logic and storage;

3. Widely-applicable smart contract is complex, and the operation and

implementation effect are difficult to meet demands;

- Data redundancy

1. Complicated protocol and consensus are introduced for general use, yet the data are too intricate;

2. No feature identification for scenarios and users, and thus unable to conduct data compression and coding according to the characteristics of the business;

3. Cause high maintenance costs.

-Performance of single-chain structure

Limited hardware storage, lower processing efficiency and higher costs.

- System upgrading difficulties

1. The traditional block chain agreement is hard for backward compatibility and upgrading compatibility.

2. The architecture design is backward and a lot of new designs and ideas cannot be applied.

-Single communication mechanism

The mere broadcast mechanism is inefficient and insecure.

- Lack of cross-chain interaction

1. The existing centralized schemes run counter to the block chain notion;

2. The existing HTLC scheme can only handle certain applications such as asset swap, and the concrete steps are complex.

4.3 ADC Chain Design Goals

- Efficient block chain system

Process in groups for different types of business processes or smart contracts.

- Solve the problem of data expansion and redundancy

Strictly regulate the data even after group processing, thus greatly alleviating the problem of data redundancy.

- Cross-chain interaction

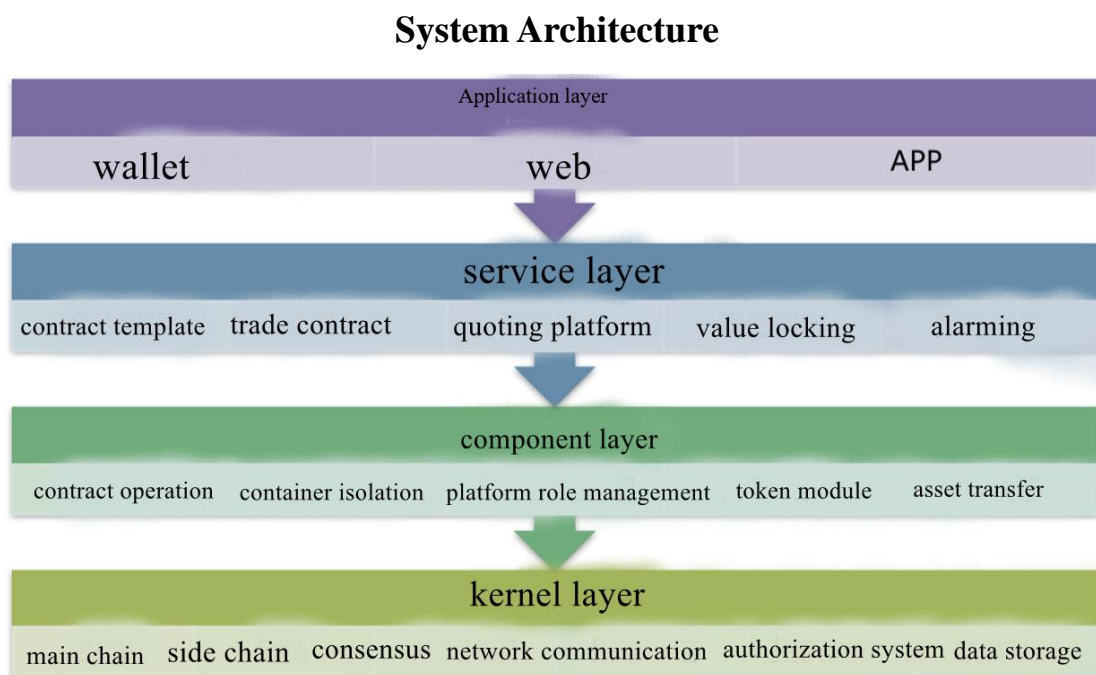
1. Realize cross-chain interaction geared to current mainstream block chains through event mechanism;

2. Provide a market model of digital currency alliance, a template for quickly building a separate chain, and the block chain system created with the template will be docked directly with the ADC Chain.

- Ecological system

1. ADC Chain refers to AWS product stack, based on EC2 and S3, and builds a complete computing ecosystem with layers;
2. Design and realize ADC Chain kernel that contains the basic functions of block chain system- minimize block chain kernel layer;
3. Provide interaction interface of the kernel layer through the Restful interface, and open the service layer to make users easier to define the system.

4.4 ADC Chain Architecture Design



- Kernel layer

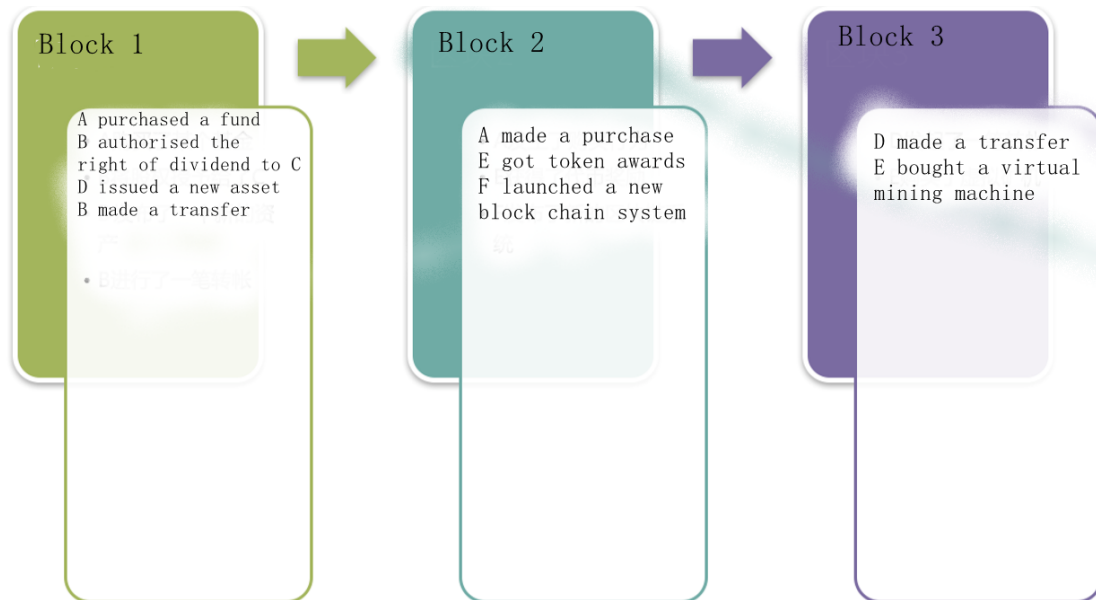
1. Main chain and side chain

a) The main chain of ADC Chain is the system foundation, consisting of the side chain index system and the token system. He consensus mechanism can be extended, and the default consensus mechanism is the virtual machine mechanism based on the ADC Chain token modules.

b) Other chains included by the main chain become side chains, each side chain has a clear business logic and value system, and each block can add more than one side chain at the same time;

c) New block chain can open separate token modules, join with the main chain in mining, set up independent consensus mechanism, introduce independent blocks to the main chain, lock some tokens, and offer main chain fees as operating costs;

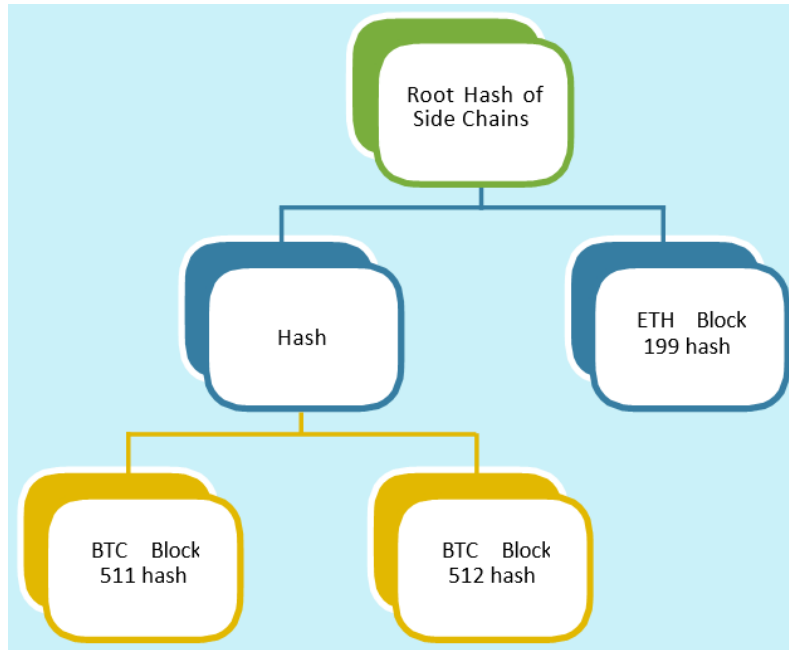
d) ADC Chain tackles a scenario problem via a side chain and minimizes data redundancy. A typical block chain can accept a variety of contracts (such as data redundancy block in the following figure), and it can be adjusted to limit a chain for contracts of the same business logic so as to make aggregation.



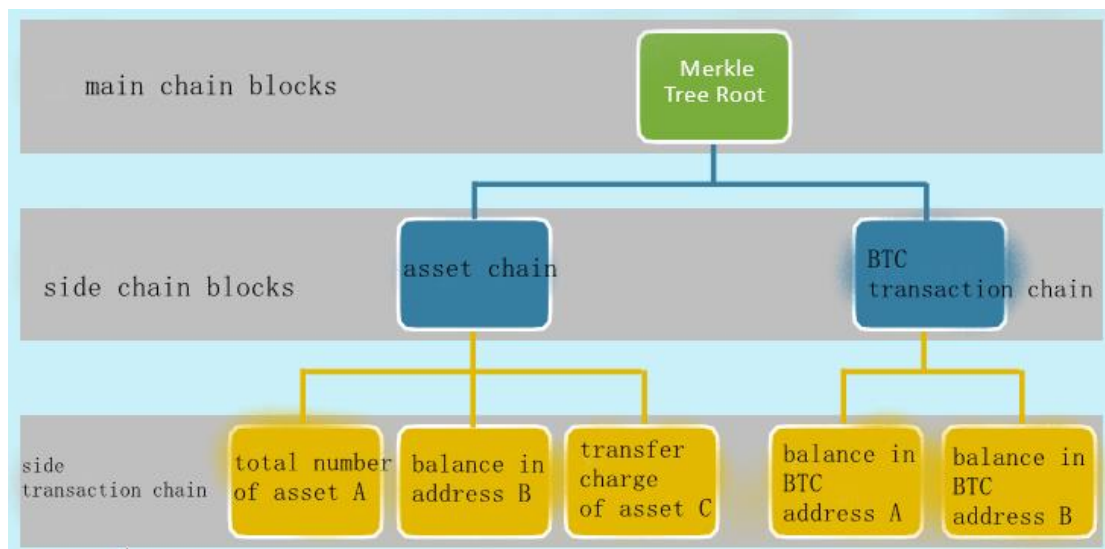
e) The main chain of ADC Chain will index three types of side chains:

- > alliance index side chain
- > ecological index side chain
- > system built-in side chain
- = > message authentication side chain
- = > digital asset side chain
- = > trade certification side chain

f) main steps of side chain index: identify and integrate information to construct a Merkle Tree, store Merkle Tree Root to the block header, as is shown below. If to confirm in a side chain that deal TX1 appears in BTC 511 block, one only needs to provide the Merkle proof of BTC 511 block and TX1 Merkle proof in BTC 511 block. After that the event input and the main chain Merkle Tree Root are done, and the transaction is proven.



g) In order to verify the efficiency, in the process of constructing Merkle Tree, one can provide the block hash, and record the transactions completed on the side chain, just as the Merkle Tree Root and transactions in the side chain shown below.

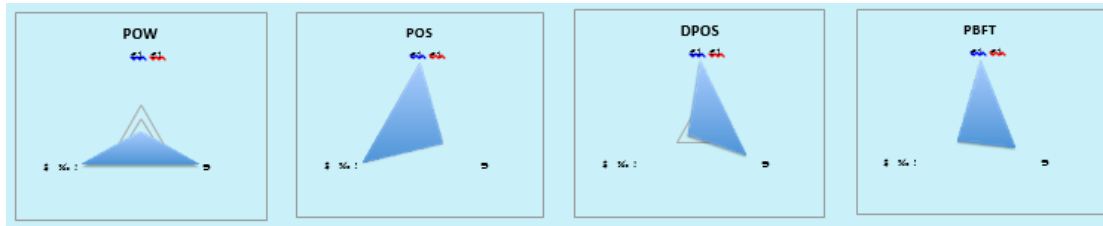


2. Consensus

a) CAP theory, namely it is possible to satisfy the two among Consistency, Availability and Partition-Tolerance;

b) The block chain system can satisfy two in high efficiency and low energy consumption, decentralization, and safety;

c) Common consensus algorithms include POW, POS, DPOS and PBFT, and the attributes of energy consumption, decentralization and safety are as follows:



d) Network communication: the kernel layer usually adopts a P2P network for data transmission, and after authorization checking the ADC Chain will open data channel for point-to-point encrypted data transmission.

3. Authorization system

Account management system, and the ADC Chain Account consists of a public-private key pairs.

4. Data storage

The ADC Chain's data storage system is composed of SQLite and kv database.

- Component layer

1. Contract operation

a) The ADC Chain ecological system can configure different contract running environments;

b) support JAVA, C#, GO, Lua and Python, and the ADC Chain also provides ADC Chain DSL;

c) The smart contracts will not be dependent on any particular language.

2. Container quarantine

a) ADC Chain will provide the contract running environment docker mirror, which can run user-defined smart contracts in relatively docker safe isolation environment;

3. Platform management role

a) ADC Chain can define the platform functions based on contract template creator, traders, digital assets quoting party, market makers and agents, and charge in line with the service.

4. Token module

a) Side chains allocate the right of bookkeeping to block creators of the main

chain by the method of combined mining, and assign part of the fees to the side chain creators, and part to the main chain.

5. Asset transfer

a) Define a transaction logic completely in a smart contract, and then perform on the ADC Chain.

- Service layer

1. Contract template system

a) All contract template creators in the ADC Chain ecosystem can create their own contract templates;

b) Founders need to pay a deposit to prevent malicious creation or usage;

c) The builders have the right to gain profits from charges on running of contracts they generate.

2. Trade contracts

a) Before deployment of the portfolio, fund managers need to decide which parameters, and once deployed it is a legal contract;

b) ADC Chain provides common basic trade smart contracts, including delivery time, proportion of management fees, lock cycle, trading unit, share pricing, dealing direction, etc.;

c) Apply on-chain inquiry/quotation of the quoting platform and automatic delivery technology such as smart execution according to priority automatic delivery technology to raise the efficiency of matching, signing, execution and other business links.

- Application layer

The application layer provides users with ecological services, including wallet, Web platform and mobile APP.

5 ADC Economy

5.1 An Introduction to ADC

The permanent number of ADC is 490 million, with any increase in the future. ADC is a built-in tool for value measuring, storage and incentive on the ADC Chain,

and can be transferred and paid between the main chain and sub-chains and between the sub-chains, in such scenarios as: transaction cost payment, business resources purchase, contribution incentives, etc. ADC holders can achieve dividends generated by the ecological system according to the node proportion.

5.2 ADC Usage

ADC will practice distributed autonomy. The possession of ADC, as pass card in the ecological system, ensures all deserved rights, including but not limited to the rights of payment, dividend, disposition, community affairs management and ecological construction investment.

5.3 ADC Distribution

The distribution and proportion of ADC are as follows:

Genesis nodes (145,000,000): 29.59%

Mining incentives (245,000,000): 50.00%

Community airdrop (100,000,000): 20.41%

5.4 ADC Roadmap

Date	Work Content
2018.08	Teamed up
2019.06	Recruited ADC genesis nodes
2019.08	End of ADC genesis node recruitment
2019.10	ADC.io V0.1 launch
2019.12	APP V0.1 launch and internal test
2020.01	Formal launch of APP V0.1
2020.03	ADC main network test
2020.04	ADC main network launch and wallet test
2020.06	Web App V0.1 launch
2020.08—long term	ADC main network and application development and actual usage

5.5 ADC Releasing and Mining Mechanism

To maintain the ADC ecosystem construction demand for funds, keep the confidence of long-term holders, and allow ADC an endogenous plus denotative growth period, it is necessary to lock the ADC of genesis nodes for a year, and then unlock 10% monthly till totally unlocked after 10 months.

Mining releasing mechanism:

- a. 50% of service charges will be allocated according to the node rights;
- b. 30% of service charges will be destroyed until there are only 200000000 ADC left;
- c. the remaining 20% will be used for the foundation's daily operations.

6 ADC Key Nodes

1. Fenbushi Capital
2. ZhenFund
3. Ribbit Capital
4. Thrive Capital
5. Eva Capital
6. Node Capital

7 ADC Core Members



Larry Mwansa

More than 20 years' experience as executive director in UK and European companies, with rich experience and network he is in the leading position in project operations.



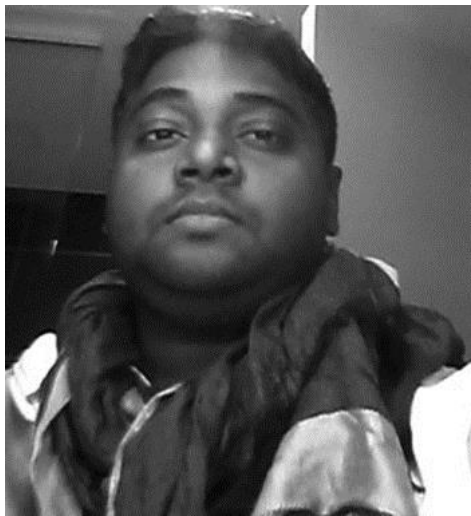
Gideon Orovwiroro

Senior back-end engineer and Linux system administrator. Rich experience in social marketing platform and Ad network infrastructure development. Strong interest in building high-performance applications for various platforms.



Daryl Naidoo

Renowned block chain expert, chief block chain mentor of Peerbuds; Chief Blockchain Instructor and World member and smart contract developer. Rich experience in block chain, distributed ledger, smart contract and encrypted transaction.



Naveen raj Challa

Tanzania national block chain technology consultant and founder of Digital Currency Influence. Graduated from Columbia University, with work experience in information technology and services industry. Strong entrepreneurial spirit, good at cash, market risk, liquidity management, treasury and business transformation businesses.

8 Risk Warning

8.1 Systematic Risk

Possible change caused by the overall common factors that may affect earnings. One example is market risk. If the encrypted digital asset market value is overvalued, investment risk will increase, and participants may expect too much of the project but may not be able to realize these expectations. Also, systemic risk includes a series of force majeure factors, including but not limited to natural disasters such as earthquake and fire, large-scale computer network fault across the globe, political turmoil, etc.

8.2 Team Risk

Africa Development Block Chain Foundation PTE. LTD. brings together an energetic technical team, as well as senior block chain experts and seasoned development personnel. The internal team stability and cohesion is essential to the foundation's overall development. The possibility does exist that in the future some core staff will leave, conflict within the team may happen, and thus the overall development of the foundation may be adversely affected.

8.3 Project Running and Marketing Risk

Africa Development Block Chain Foundation PTE. LTD. will spare no effort to realize the development goals and earn more development space. At present, the foundation already develops a relatively mature business model and planning. However, in view of unpredictable factors in the industry's development trend, the existing business model and the overall pattern may not bring satisfactory results if in poor matching with market reality. Besides, this paper may be updated and adjusted, and if participants fail to get the update details, or the public do not understand the latest progress, the project may face unsatisfactory subsequent development due to insufficient understanding of the participants or the public.

8.4 Hacker Attack and Crime Risk

In terms of security, encrypted token has many characteristics, such as anonymity and lower traceability, thus may be taken advantage of by criminals or vulnerable to hacking attack or crimes such as illegal transfer of assets.

8.5 Other Unpredictable Risks

Along with the continual development of the block chain technology and the industry, Africa Development Block Chain Foundation PTE. LTD. may face some risk has not been met. Participants please gain a thorough understanding of the project before participation, and reasonably adjust their expectations.

9 Disclaimer

This document is for informational purposes only. The contents do not constitute any investment suggestion, advice or solicitation. Such invitations must be made in the form of a confidential memorandum and must comply with relevant laws and regulations. The contents of this document shall not be construed as a forced participation in private placements. Any conduct related to this white paper shall not be considered as participation in private pre-sales activity, including requesting a copy of this white paper or sharing this white paper with others. Participation in private placements means that the participants have reached the age standard and have full civil capacity. They participate in the project out of their own will and have a clear and necessary understanding of Africa Development Block Chain Foundation PTE. LTD. prior to their involvement. The Africa Development Block Chain Foundation PTE. LTD. team ensures that the information in this white paper is true and accurate. During the development process, the platform may be updated, including but not limited to platform operation mechanism, ADC mechanism and distribution. Some of the contents may be adjusted in a new version as the project progresses. The team will pose an announcement or a new white paper version on the website. Participants are required to obtain the latest white paper in a timely manner and adjust their decisions based on the updates. It is expressly stated that no liability is assumed by Africa Development Block Chain Foundation PTE. LTD. due to participants' (i) reliance on

the contents of this document, (ii) inaccuracies in the information herein, and (iii) any losses caused by actions based on this document. Africa Development Block Chain Foundation PTE. LTD. will make every effort to achieve the goals mentioned in the document, but in view of force majeure, the completion commitment cannot be fully made. As a circulation and settlement token within the Africa Development Block Chain Foundation PTE. LTD. network, ADC is an important incentive rather than an investment product. The possession of ADC does not represent any right of ownership, control, and decision-making in the foundation platform. ADC is a token used in the foundation network, and does not belong to the following categories: (a) any kind of currency; (b) securities; (c) equity of legal entities; (d) stocks, bonds, notes, warrants, certificates or other instruments that confer any rights.

The value increase of ADC depends on the laws of the market and the needs of applications. The team does not make any commitment to its value increase and is not responsible for the consequences of its value increase or decrease. To the fullest extent permitted by applicable law, the team is not responsible for damages and risks arising from participation in private placements, including but not limited to direct or indirect personal loss, damage to commercial profits, business information disclosure or any other economic loss. Africa Development Block Chain Foundation PTE. LTD. complies with any regulations and industry self-discipline declarations that are conducive to the healthy development of the industry. Participation means participants' full acceptance of relevant inspections, and information they provide for such inspection must be complete and accurate. Africa Development Block Chain Foundation PTE. LTD. has clearly communicated the possible risks to the participants. Once the participants participate in the pre-sale activities of the project, they are deemed to fully understand and accept all terms and conditions, and will shoulder the potential risks on their own account.