



A decentralized platform for the global specialized machinery market

Secure transactions, valid machinery condition data guarantees,
uberized processes of maintenance and machinery condition
verification.

www.ironblock.io

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1. The Idea

IronBlock is a global decentralized platform designed to facilitate deals and optimize specialized machinery market services - with no middlemen involved. One of the key purposes of the platform is to ensure deal security and enable more transparency about the state of the machinery being sold - for all parties involved.

The Problem:

Today, conventional sale models for specialized machinery lack transparency and pose risks in both direct and distance sales. The price of used machinery on this market can run up from several tens of thousands US dollars to a few million US dollars, depending on its condition and original price.

Validity of technical condition data for specialized machinery, combined with trust in the counterparty make up the key criteria for dealmaking on the market. Online listings and bulletins serve as the main communication channel between market players, and they don't guarantee that condition data to be true or that equipment is available in the first place.

The global specialized machinery sale, lease, and maintenance market potential for just construction, agriculture, and raw materials exceeds \$1 trillion a year, with new machinery sales growing at around 6.5% a year. Yet direct online sales without middlemen only amount to no more than 2% of the entire market. The reason for a sales volume this low is primarily due to lack of trust between parties.

This trust issue is being solved by major industrial auctions such as Ritchie Bros., Iron Planet and others. With that said,

using these auction rings does impose a number of restrictions on machinery owners along with logistics expenses, as well as downtime and pre-sale preparation expenses.

It stands to reason that none of the existing business models solve the trust issues present between market players globally, neither the solutions are easily scalable, and ultimately, one way or another, lead to additional expenses for both buyers and sellers.

The Solution:

The solution lies in creating a global decentralized blockchain platform, designed to uberize verification of machinery condition, as well as its maintenance, using local service centers and authorized agents. The IronBlock platform is designed to become exactly that.

2. Machinery market analysis

Construction, agriculture,
raw materials sectors

Main machinery market figures:

(for three main sectors: agriculture machinery, construction machinery, mining machinery).

\$447 bn

Total machinery market sales
volume 2017

17,23 m units

Annual machinery market sales volume,
new and used

6,5%–8,5%

Annual new machinery sales volume
growth

\$173 bn

Annual new machinery sales volume
(1,73 m. units)

\$274 bn

Annual used machinery sales volume

\$125 bn

Annual machinery leasing market
volume: around

Once a month

Average maintenance frequency

\$460 bn

Service & parts market volume

\$1 tn

Total annual machinery sales, leasing,
and maintenance market volume, new
and used

Machinery market ecosystem

A look inside the specialized machinery market reveals three main
sectors:

agricultural machinery (tractors, harvesters, seeding machines
etc.);

heavy equipment (crawler bulldozers, crawler shovels, tractors,
loaders, hoists etc.);

ore mining and minerals extraction equipment (shovels,
bulldozers, drill rigs, loading machines etc.).

Main industry players:

specialized machinery manufacturers;

specialized machinery owners;

buyers;

dealers;

maintenance shops;

leasing companies.

Among the key online machinery sales market players are Ritchie
Bros., Iron Planet and others.

Heavy equipment market leaders

Manufacturers

Agricultural equipment:

Deere & Company (USA),
CNH (USA), AGCO (USA),
Claas (Germany),
SDF (Same-Deutz-Fahr) (Italy),
Rostselmash (Russia),
Gomselmash (Belarus),
Bryanskselemash (Russia),
Minskiy traktorniy zavod (Belarus),
Lidaagroprommash (Belarus),
Krasnoyarskiy zavod kombaynov (Russia),
Lite-Trac (UK),
Zetor (Czech Republic).

Construction, mining equipment:

Caterpillar (USA),
Komatsu (Japan),
Hitachi (Japan),
Volvo (Sweden),
Sany (China),
Zoomlion (China),
Liebherr (Switzerland),
Terex (USA),

John Deere (USA),
Doosan (South Korea),
Belaz (Belarus),
Kamaz (Russia),
JCB (UK).

Leasing companies

In Russia:

«Sberbank Leasing»,
«VTB Leasing»,
«TransFin-M»,
«VAB-Leasing»,
«Baltiyskiy Lizing»,
«Siemens Finance»,
«Gazprom Leasing»,
«UniCredit Leasing»,
«RESO-Leasing»,
«Element-Leasing»,
«Stoun-XXI» (Group),
«Severnaya Venetsia» (Group)
and other.

In Europe:

Société Générale Equipment Finance (incl. ALD Automotive),
BNP Paribas Leasing Solutions (incl. Arval),
Volkswagen Leasing GmbH,
De Lage Landen International B.V.,
Deutsche Leasing,
UniCredit Leasing S.p.A.,
LeasePlan Corporation N.V.,

Alphabet International,
Nordea Finance,
Crédit Agricole Leasing & Factoring

and other.

In USA:

Susquehanna Commercial Finance Inc,
ADP Commercial Leasing,
First Hawaiian Leasing Inc.,
Marcap Corporation,
CBI Leasing Inc,
SunBridge Capital,
Stearns Bank,
California First Leasing Corp,
Financial Pacific Leasing,
New World Equipment Funding

and other.

Main heavy equipment market ecosystem segments:

Main players

- Equipment owners
- Buyers
- Dealers
- Service centers
- Leasing companies

Basic services

- Sales
- Rentals
- Leasing
- Service and spare parts

Related services

- Customs broker
- Logistics
- Lending and credit
- Insurance

The heavy equipment market ecosystem is inhabited by hundreds of thousands of players all over the world, and every industry facet has its own manufacturing, sales and leasing leaders (see table above). Apart from main players in this ecosystem, the heavy equipment market attracts a lot of adjacent industries companies that provide related services such as: logistics, financial, insurance, customs clearing, and other.

The scale of the ecosystem indicates low consolidation on the global market, with a lot of parties interested in doing business.

Machinery sales

The sales volume in the machinery market segment includes sales by manufacturers and dealers of both new and fully operational used machinery.

Analysis of 2016 machinery sales volume data from Ritchie Bros. using a mathematical model showed that out of \$447 bn total machinery sales, new machinery accounted for \$173 bn (38.7% of the market volume), and used equipment for \$274 bn (61, 3% of the market volume).

According to the data from Statista.com, the total machinery market sales volume in three key segments (construction machinery, agricultural machinery, mining machinery) in 2017 will exceed 2016 (\$447 bn) with 42.9% of the market being construction machinery, which can also be applied in mining operations.

Based on the global machinery market structure and new construction machinery turnover, the total amount of new equipment in the three segments will be 1.73 m. units in 2017.

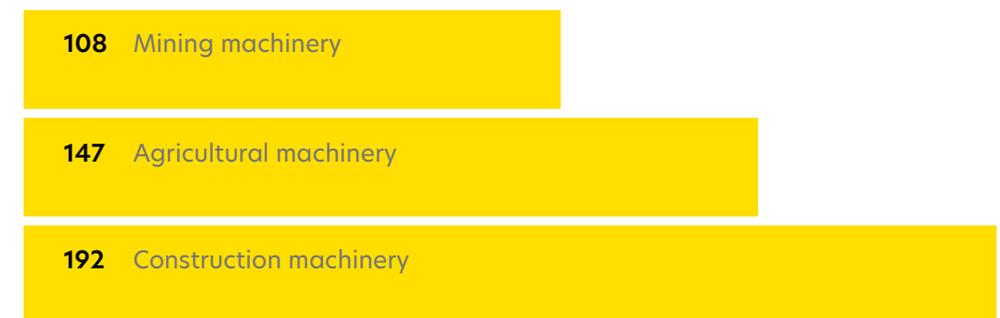
Based on the presented statistics, annual sales growth of new machinery is 6.5%.

According to Statista.com data and the Ritchie Bros. auction house, the global sales of used machinery reached 15,5 m. units, equivalent to \$274,87 bn per year.

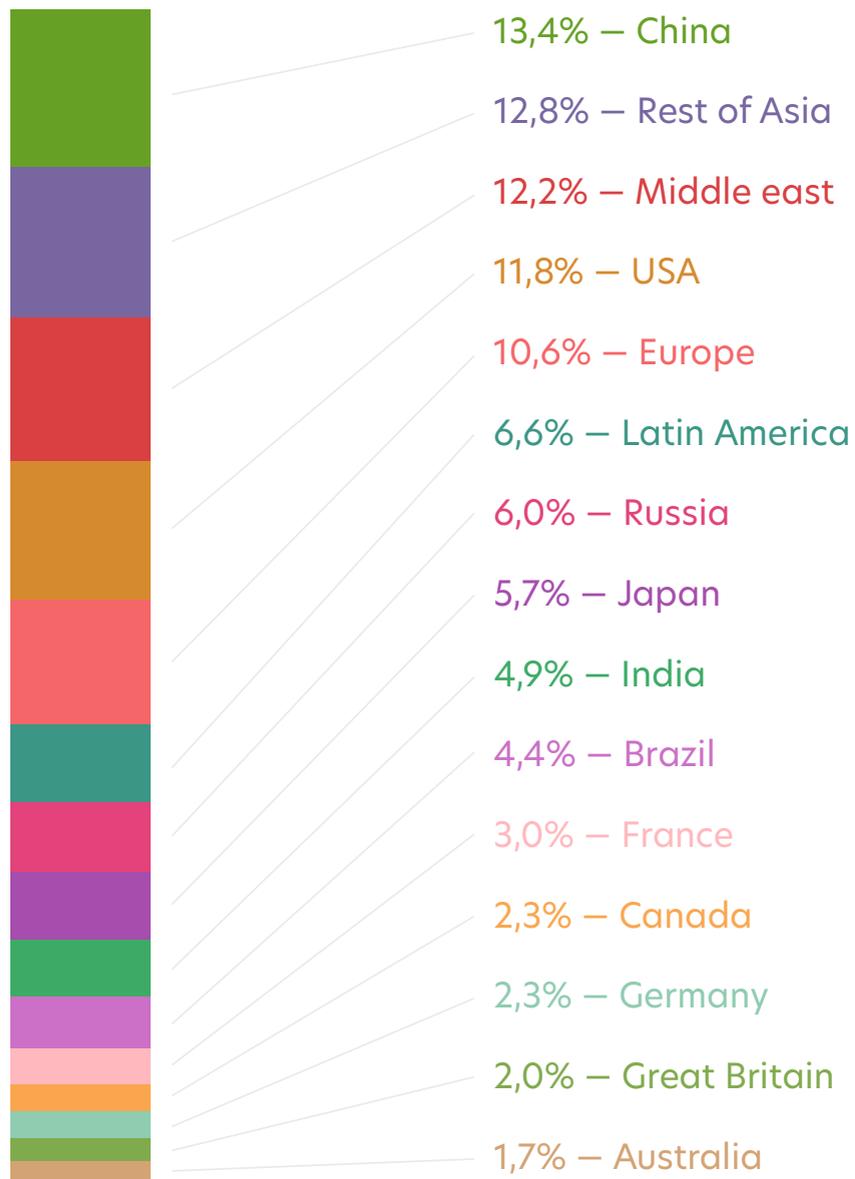
The Ritchie Bros. annual turnover from the sales of used machinery (including transport) is \$4,3 bn, which is only 1,2% of the global used machinery market worth \$360 bn.

Thus, the machinery market volume can be most accurately analyzed through the construction machinery market (almost ½ of the machinery market).

The size of global heavy machinery market by segments in 2017 (\$ bn.)



Used machinery market volume is \$274,87 bn in key areas



Construction machinery market

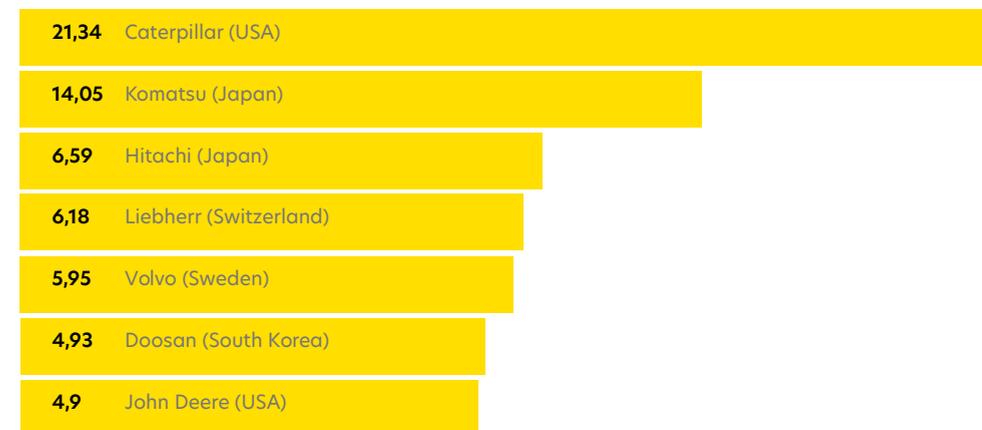
According to the data from Statista.com, construction machinery segment will make up \$192 bn in 2017. According to Machineryzone.com, the total number of construction machinery sold in 2016, amounted to 650 thousand units of new machinery. According to Machineryzone.com projections, the new machinery sales volume will amount to 809 thousand

units in 2021 . According to the aforementioned sources, the leading markets for construction machinery are: Asia, America, Europe as well as Japan and India.

According to Machineryzone.com, new equipment sales volume amounted to \$69,8 bn in 2016. According to Machineryzone.com projections, with an annual market growth of 7% expected revenue from new machinery sales will amount to \$74,7 bn (43% of market volume) in 2017.

The global construction machinery market includes more than 1.5 thousand specialized machinery manufacturers . According to Statista.com, based on the data analysis of construction machinery sales volume, the largest manufacturers in this field for 2016 are the following companies: Caterpillar (USA) - \$ 21,34 bn., and Komatsu (Japan) \$ 14,05 bn.

Sales volume of the construction machinery leaders, \$ bn.



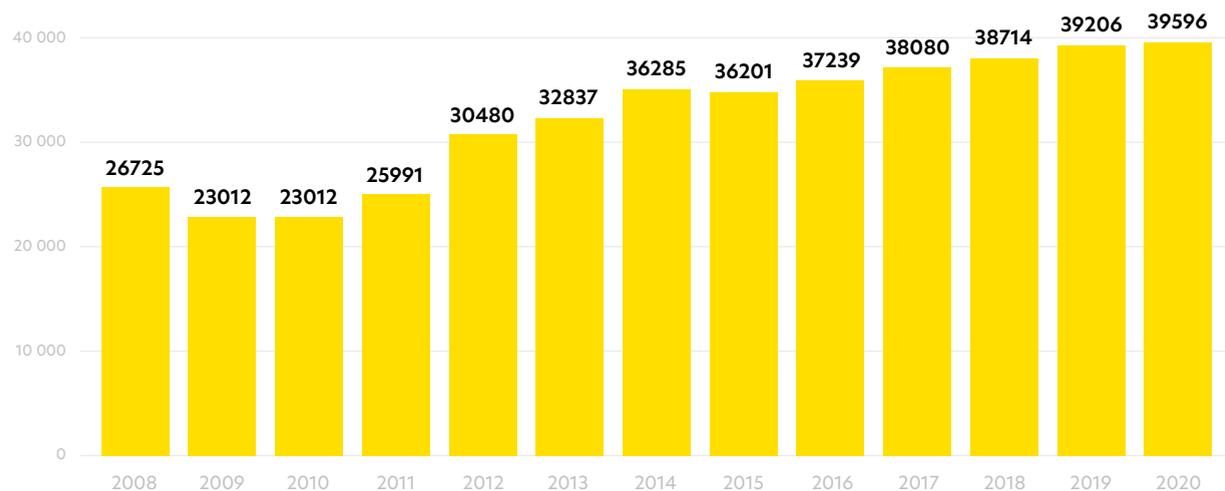
Sales paradigm: a shift to online sales

According to the Ritchie Bros. auction house, online biddings are becoming more popular among buyers. In 2016, 53% of deals were made online. The number of Ritchie Bros. registered users has increased from 240 thousand people to 560 thousand over the period from 2006 to 2016, demonstrating a 7.8% annual growth rate in registered users; the number of online buyers for the same period has increased from 75 thousand to 139 thousand people, displaying a 5.9% annual growth rate of online buyers. After analyzing the data available on the Ritchie Bros. auction house website, comparing both offline and online segments, we can confirm the trend of buyers moving into the online segment that, in turn, indicates a shift in the way heavy equipment is purchased - stepping away from dealers, trading companies and sales platforms, etc. and opting for direct purchases from specialized machinery manufacturers or owners, through online platforms.

Equipment rentals

According to Statista.com, actual revenue from renting and leasing of heavy machinery and equipment in 2016 amounted to \$37,24 bn in the USA. The projected revenue is reaching \$39,5 bn in 2020.

Rental and leasing revenue from specialized machinery over 2008-2020, \$ bn.



According to the Global Market Insights marketing agency, the most prominent industrial segment is the one for construction machinery, the leasing market

volume of which will reach \$75,2 bn in 2024, globally. The most important category of leased equipment will be earth-moving machinery, including excavators and forklifts, the proceeds volume from renting this machinery will be at least \$ 40 bn by 2024.

Service

Maintenance and service are integral parts of special machinery life cycle. Machinery technical inspection should be conducted no less than once in 2 months. According to Minnesota Department of Transportation, machinery expenses run up to 25% of all expenses for the entire period of machinery operation (including property tax, maintenance, operator salaries) of the initial price for a machinery unit. Service and spare parts expenses run up to about 35% of total expenses for the entire period of equipment operation.

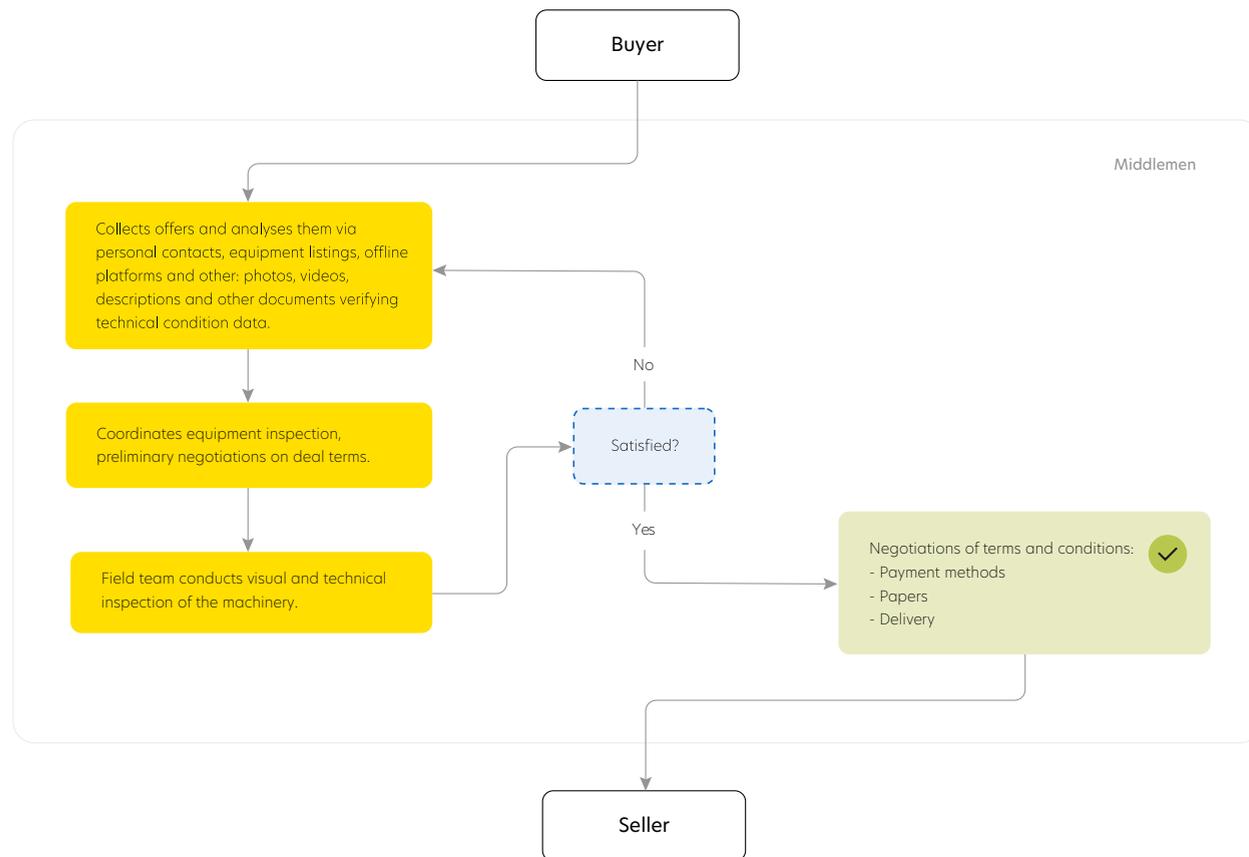
Based on our analysis of the service market and the recommended prices for regular maintenance as offered by the leading machinery manufacturers, we can clearly see the following: new warranty-covered equipment owners choose to undergo regular maintenance at the end of warranty period at unofficial service centers 50% of the time as a way to keep operating expenses down; Another 30% of specialized machinery owners conduct maintenance without the help of either service centers or official dealers. According to the maintenance schedule, regular maintenance should be carried out every 500 running hours, or approximately once a month, based on two shifts of 8 hours per day, the average maintenance price is \$22,655 per year; moreover, it is necessary to re-assemble the chassis of special machinery every 2 years. The costs of such procedure is estimated at about \$95 000. On average, it turns out that yearly service expenses reach about \$70 000.

Based on our calculations, the annual turnover of new machinery maintenance is \$39 bn per year (1.73 m. units), second year equipment maintenance turnover is \$81.6 bn (40% of the purchased equipment in the previous year), used machinery maintenance (three or more years) amounts to \$310 bn from non-official dealers (cheaper by 50%). Thus, the total machinery maintenance reaches about \$430 bn.

3. Identifying the problem

Market analysis shows that every year about 17 million specialized machinery units are sold worldwide with \$447 bn in sales volume, while used equipment sales share is about 90% of the total amount or 15.5 million units with \$ 274 bn sales volume in three main areas.

The usual scenario of equipment sales in 99% of cases can be described with the following chart:



This chart shows that most transactions today are impossible without the help of intermediaries, the number of whom can be two or more parties: buyers' and sellers' agents, service centers, resellers, trading platforms, etc. The main tasks that buyers and sellers try to solve through intermediaries are: secure transactions support, desired equipment, the confirmation of seller's information about machinery, technical condition control, logistics and other services.

The perfect equipment sale scenario is when the terms of contract are already agreed upon, and the equipment condition is already checked and verified by the time the buyer is found.

Price of every transaction ranges from several tens of thousands to several million dollars. At the same time, all existing online platforms and listings with machinery sale advertisements do not guarantee the accuracy of information about presented lots and machinery owners.

Today, online machinery direct sales constitute no more than 2% of the total market volume with an approximate annual 4.2% growth of online audience. The main online machinery sale market player today is the Ritchie Bros. online auction house, which also includes: rbauction.ru, equipmentone.com, ironplanet.com and others. Whereas, more than half of all machinery purchases on these websites were made by buyers outside of the regions where the purchased machinery was located, meaning distant sales. Buyers relied solely on the information provided on these websites.

Equipment	Region 1	Region 2	Directly w/ warranty	Middleman	price increase in %
Komatsu D155AX-6	North America	North America	\$110 600	\$175 000	58,23%
Caterpillar 140M	North America	North America	\$72 500	\$90 758	25,18%
Caterpillar 966H	Europe	Europe	€ 80 000	€ 93 000	16,25%
John Deere 9520	North America	North America	\$110 000	\$194 500	76,82%
John Deere S 680	North America	North America	\$145 000	\$189 500	30,69%

Average **41,43%**

Yet sales statistics show up to a 50% benefit, and in some cases as much as 90% for sales conducted without intermediaries – directly from the owner.

Similar equipment in other regions

Komatsu D155A-5	Europe	Russia/Khimki	\$159 300	\$189 285	18,82%
Caterpillar 966H	North America	North America	\$133 500	\$255 000	91,01%
John Deere 9520	Europe	Russian Federation	\$129 029	\$151 015	17,04%
Caterpillar 140M	North America	Russian Federation	\$100 000	\$121 559	21,56%

Average **37,11%**

We can say that Ritchie Bros is the only equipment offers aggregator today where the issue of validity of information about each equipment unit is partially resolved, that in return enables online buyers to analyze presented lots and purchase distantly. It becomes possible due to these projects' well-developed offline infrastructure that allows all the specialized machinery to be in a verifiable place, physically available. Therefore, there is a guarantee that the equipment presented on Ritchie Bros. is available to sellers and its visual condition (sometimes technical) is confirmed.

The machinery renting and leasing market analysis shows a steady growth trend: more than 9% annually. The main criterion in concluding renting and leasing transactions is the trustworthiness of the leaseholder. The main problem is that Leasing companies and Owners are trying to solve, apart from payments regularity, is to ensure physical safety and to reduce risks of damage or loss of equipment, as well as guarantee its safety in the proper form throughout their operating period (during leasing or renting) by their customers. Timely equipment maintenance in accordance with regulations ensures its high residual value after the lease or rental contract expires, in a scenario where the equipment is later sold on the secondary market.

	Ritchie Bros	EquipmentOne	Mascus
Type	Marketplace	Marketplace	Listing
Information guarantee	Yes	Yes	No
Online sale ESCROW	Yes	Yes	No
Offline platform	Yes	No	No

Thus, based on the above information, there are 5 main market problems:

Problem 1 - Short-term trust

Trust in the data about the current machinery condition and its buyer or seller's reliability is the main deciding factor in whether or not to purchase heavy equipment online.

Problem 2 - Long-term trust

When renting or leasing machinery, one of the important contract conditions is the ability to control the leaseholder or renter's commitment to comply with maintenance procedure requirements.

Problem 3 - Market opacity

A large number of intermediaries significantly increases the total machinery cost on the way to conclude sale transaction (up to a 100% higher price).

There is no global infrastructure that would allow machinery buyers and owners to interact directly.

Problem 4 - Escrow and convenience of cross-border transactions

Machinery sellers and buyers obviously need a clear and transparent Escrow transaction mechanism which guarantees mutual fulfillment of contractual obligations on the delivery and payment for the heavy equipment. Nevertheless, all the guarantees granted, there is still a complicated payment procedure with the help of conventional banking.

Problem 5 - Sellers and buyers' access to the global market

The largest market players who can provide a solution to the problems described above, satisfy today only 2% of market demand. The rest of the sellers, buyers and leasing companies

are limited to local offers only.

Conclusion:

All the identified problems are common for most regions, as evidenced by market analysis data and information from our colleagues / partners from different countries. Solving the identified problems will increase the investments efficiency on the market and reduce the costs connected with machinery maintenance, exploitation and resale.

4. Our Solution

IronBlock is a decentralized platform for machinery condition verification, maintenance services optimization and it guarantees compliance with all the contractual obligations for transactions between participants in the market of construction, mining and agricultural machinery.

The main task of IronBlock is to provide the necessary confidence level in the information about traded equipment so that owners, leasing and insurance companies, as well as buyers around the world, can interact directly without intermediaries, without risks and with significant money and time savings.

IronBlock provides a solution for the two major problems for the global specialized machinery market::

1. Proving the validity of information about machinery.
2. Guarantees of compliance with contractual obligations between participants.

Equipment data validity.

The solution is based on uberization of maintenance services and machinery inspection with participation of local service centers and information recording on the blockchain. Each service center should

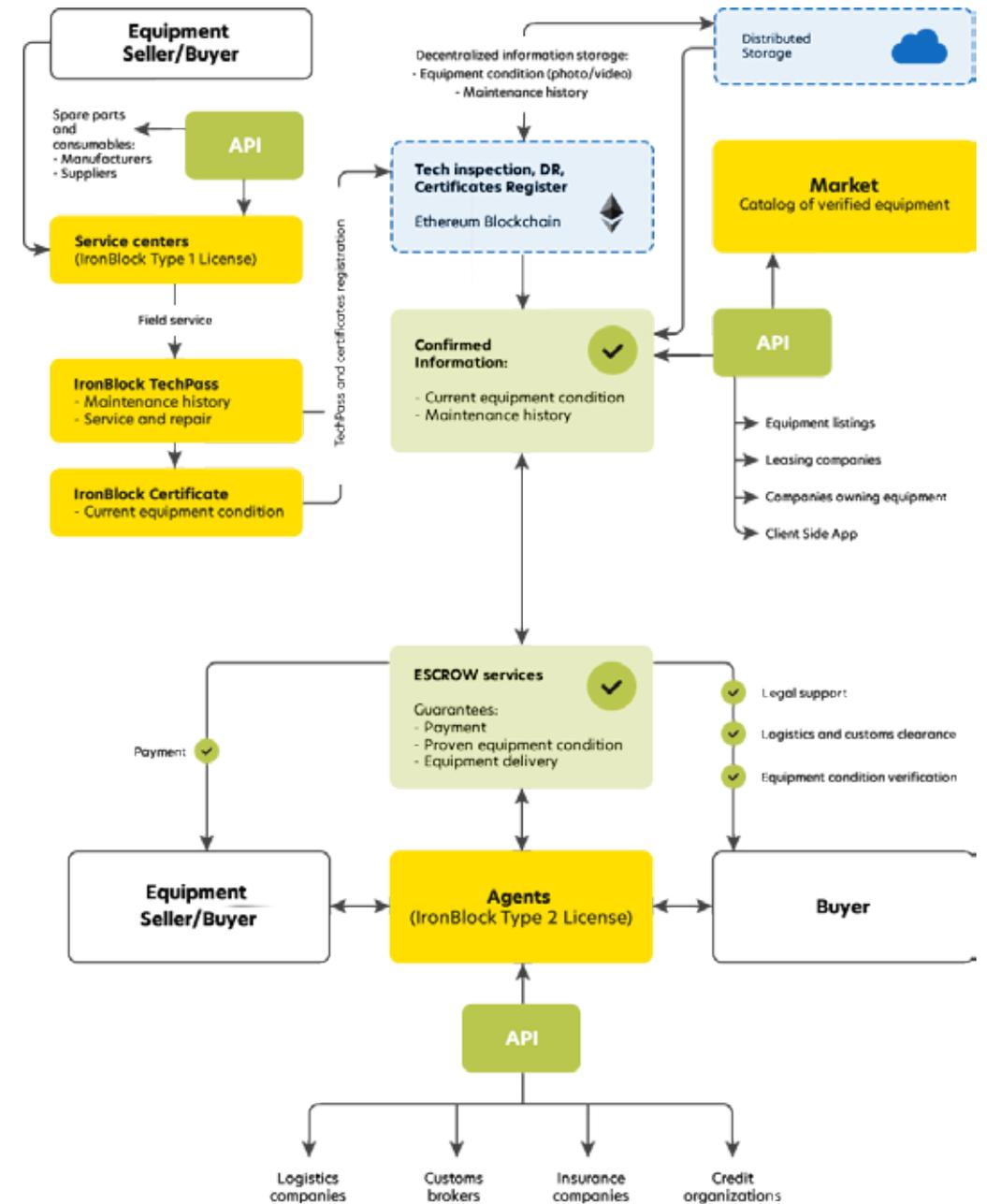
undergo verification and selection process to obtain an IronBlock license. The quality and speed of processing orders for machinery certification and service directly affects the service center's rating and its total profit from each transaction.

Guarantee of compliance with contractual obligations between participants (ESCROW).

The use of IronBlock certificates and techpassports guarantees compliance with contractual obligations with the help of local licensed IronBlock agents, writing down and sealing the terms into a smart contract. Our solution will allow to monitor the transaction on all stages:

- L/C for transaction ;
- Equipment logistics;
- Customs registration;
- Legal support.

To make control and compliance with the contractual obligations possible, the API access to the platform will be provided to the largest local and international logistics operators, insurance companies, customs brokers and other participants of the market ecosystem.



Proposed solution is based on four elements:

TechPassport

Every maintenance history:

- Work done
- Cost
- Date
- Running hours
- Registration data

Licenses

Type 1 (services):

- Issue of machinery certificates
- Servicing

Type 2 (agents):

- Transaction support
- Arranging associated services

General:

- Contacts
- Services reach
- Rating
- Feedback
- Number of orders completed
- Credibility level
- Experience

Certificate

General:

- Owner
- Location
- Documents
- Cost of overhaul
- Certificate validity period

Level 1 (basic):

- Visual examination of the major assemblies and primary equipment
- Punchlist, photo and video report

Level 2 (extra):

- Computer aided machinery diagnostics
- Oil pressure readings for major units and primary equipment

Level 3 (extra):

- Oil pressure readings for the power train, compression tests, oil analysis

Marketplace

Verified machinery catalog:

- Construction machinery
- Mining machinery
- Agricultural machinery
- Oil-and-Gas equipment
- Forestry equipment
- Other heavy machinery

Participants:

- Leasing companies
- Machinery owners
- Buyers
- Insurance companies
- Logistics companies
- Service centers
- Authorized dealers

Transaction guarantees:

- Sale
- Lease
- Service

Certificate

General:

- Owner
- Location
- Documents
- Cost of overhaul
- Certificate validity period

Level 1 (basic):

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Level 3 (extra):

- Oil pressure readings for the power train, compression tests, oil analysis

Equipment condition certificate

Basic element of the platform is the IronBlock trusted electronic certificate, implemented in the Ethereum blockchain smart contracts using distributed data storage technology.

In the industrial machinery market, machinery inspection services are well developed. The average cost of such service is about 500 - 1000 Euro. Local service centers can provide such service, sending their field teams to the equipment location wherever it is, to conduct technical inspection. As a rule, the client is a Buyer or Seller who wants to sell used equipment for a higher price, or vice versa.

The IronBlock certificate has 3 levels of machinery validation. One basic and two extra.

To see an example of an issued certificate, follow this link:
<http://www.machinefinder.com/eval/a7adbe22c00b8ba392d7-126039>

Certificate authenticity

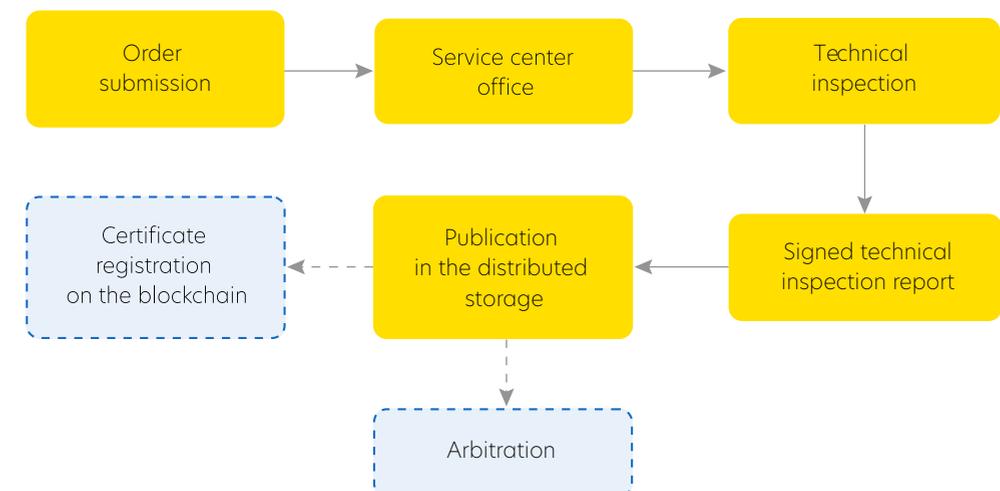
Each issued Certificate will be signed by a licensed service center, the certificate hash will be recorded on the Ethereum blockchain, with all the detailed information, including media files, will be placed in a distributed file storage system for the entire validity period of the Certificate. At the same time, during the Certificate validity period it will be impossible to make any changes, which guarantees its authenticity and protects against forgery.

Certificate in use

The certificate allows buyers to verify equipment data, and sellers to prove its validity. That said, the Owner can use it

while publishing ads on any platform to confirm authenticity and validity of the information presented in the equipment description. The buyer can also order certificate for any machinery he plans to purchase. Leasing companies and owners of large equipment fleets can distantly and regularly receive reliable information about their equipment's condition. IronBlock certificate will also allow to use ESCROW service for specialized machinery transactions using IronBlock platform later down the line.

Implementation chart:



The certificate solves the problem of short-term trust - during immediate business negotiations. It reflects the necessary information for the buyer to base his decisions on during the machinery purchase and allows to pass up any additional inspections.

TechPassport

Every maintenance history:

- Work done
- Cost
- Date
- Running hours
- Registration data

Techpassport

Techpassport is designed to confirm current machinery state and control its condition, as well as to improve maintenance quality in the long term.

Maintenance frequency for heavy equipment is done, on average, every 250-500 hours (an average of at least once every 2 months).

IronBlock provides global infrastructure for regular, high-quality maintenance through licensed local service centers.

Service history authenticity:

Maintenance work information is recorded in blockchain, and detailed information is stored in a distributed file storage system. Thus machinery maintenance history is saved automatically, throughout the operating period - even if the owner and location change.

Application:

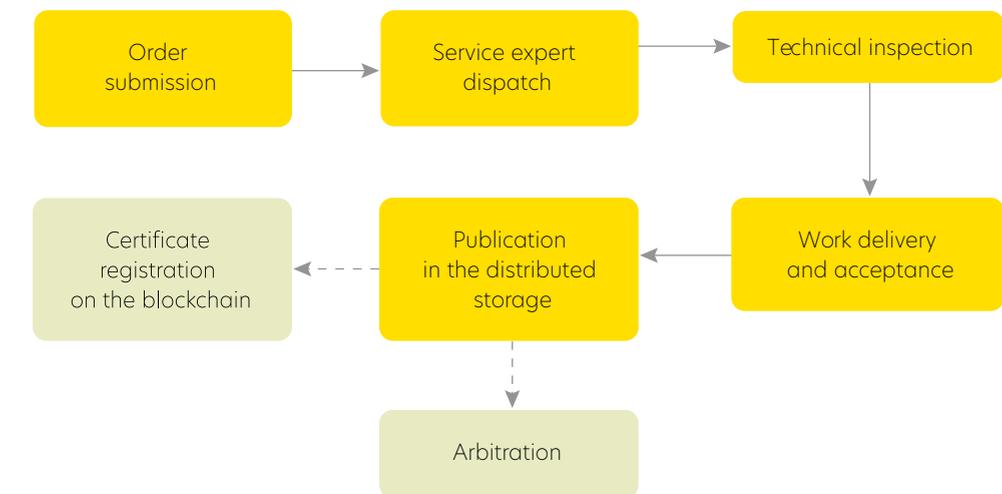
The techpassport solves the problem of trust and control over machinery condition in the long term, be it renting or leasing machinery. This solution allows leasing companies and machinery owners to control maintenance timeliness, optimize cost while keeping high standards of quality, automate storage and reporting of maintenance services.

On top of that, by integrating with IronBlock Market or any other platform, current owners will be able to provide potential customers with access to extended information about the technical state. Given the possibility of machinery state monitoring via a techpassport, it becomes possible to negotiate equipment sale or lease in advance - before the sale

period begins, while minimizing downtime losses caused by taking the equipment out of production for sale (placing it on an auction and other offline platforms).

The platform will provide access for machinery manufacturers and distributors, to supply and purchase consumables and spare parts from them directly at the best prices, so as to optimize regular maintenance cost.

Implementation chart:



Licenses

Type 1 (services):

- Issue of machinery certificates
- Servicing

Type 2 (agents):

- Transaction support
- Arranging associated services

General:

- Contacts
- Services reach
- Rating
- Feedback
- Number of orders completed
- Credibility level
- Experience

IronBlock license (UBER for services and agents)

To provide Certificate issuance and transactions support, the IronBlock platform will gather the best local experts in machinery maintenance and transactions support.

There are two types of the IronBlock license: for service uberization and for transactions support:

1. Issuance of certificates and maintenance:

- Maintenance procedures;
- Punch list work;
- Photo / Video shoot;
- Forensic examination;
- Owner identification;
- Wear and tear documentation;
- Instrument readings documentation ;
- Regular maintenance.

2. Transactions support:

- Preparation of documents
- De-registration
- Registration
- Logistics
- Customs
- Transportation insurance
- Disassembly for transportation with subsequent assembly

Type 1 License. Work with certificates and maintenance.

The main criteria for IronBlock license applicants to work with Certificates and Service:

- Maintenance and repair experience of at least 3 years;
- Qualified field team in hand;
- A certain number of confirmed completed service and repair orders;
- Necessary tools in hand;
- Confirmed experience servicing a list of equipment brands and types.

Using the example of UBER, when receiving a request for a certificate or a maintenance order, the IronBlock platform will provide the best choice from a selection of authorized service centers for this order, taking into account:

- their trust rating;
- distance from machinery location;
- the level of positive feedback from machinery owners on completed orders;
- the number of closed machinery transactions that it has certified in the past.

Guarantees

IronBlock licenses will be issued to a limited number of participants in the machinery maintenance market, and to companies specializing in heavy equipment resale that allows them to take a significant share of the local markets. The quality of order completion, ratings and compliance with standards will allow them to increase workload and their commission from each transaction, as well as increase

customer loyalty.

Service operation and machinery certification

Today, any construction, mining or agricultural machinery must undergo regular maintenance. Due to large size of heavy equipment and complex logistics inherent to this industry, maintenance is often carried out directly on construction sites / machinery operation locations. In that case, maintenance is carried out by specialized service centers with the help of field teams. It's these centers that can make full technical condition diagnosis or conduct field maintenance, and issue an IronBlock certificate directly at the work site or storage place of equipment in question.

Marketplace

Verified machinery catalog:

- Construction machinery
- Mining machinery
- Agricultural machinery
- Oil-and-Gas equipment
- Forestry equipment
- Other heavy machinery

Participants:

- Leasing companies
- Machinery owners
- Buyers
- Insurance companies
- Logistics companies
- Service centers
- Authorized dealers

Transaction guarantees:

- Sale
- Lease
- Service

IronBlock Market

IronBlock Market is a classic marketplace, which can facilitate local and cross-border transactions for machinery purchase or lease using fiat or cryptocurrencies all under control of Ethereum smart contracts.

The condition for placing machinery on the marketplace will be the owner's will to sell machinery and receive the IronBlock Trust Certificate, or availability of a current IronBlock techpassport. Thus, the entire database of equipment presented on the market will be fully verified. A buyer or lease holder will be able to choose from a variety of reliable options the equipment he needs, and then decide on purchasing or renting it using just a computer or tablet, based on the technical condition data listed in the IronBlock Trust Certificate without the need for additional tests.

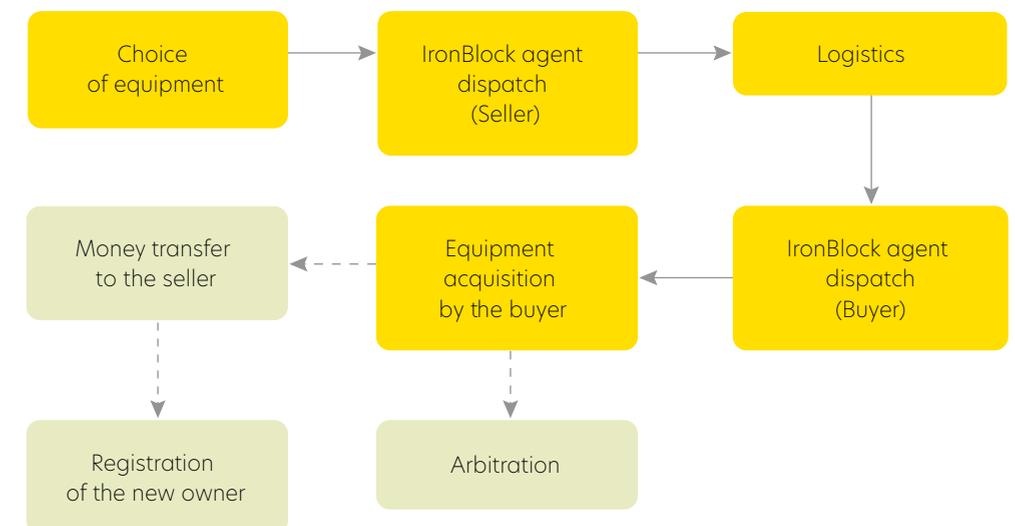
Contractual obligations are put into practice through smart contracts and are supported by IronBlock agents. Thus, financial security of all transactions as well as payment guarantees for sellers and renters will be ensured.

Today there are several major construction machinery auctions in the world, the largest of which is Ritchie Bros. (40 countries, 1.2% of the world market) and Iron Planet (owned by Ritchie Bros.). Ritchie Bros. runs its activities using its own local fixed bases, holds significant stock of spare parts and a staff of highly qualified experts. All of this requires substantial resources and investments for scaling and marketing.

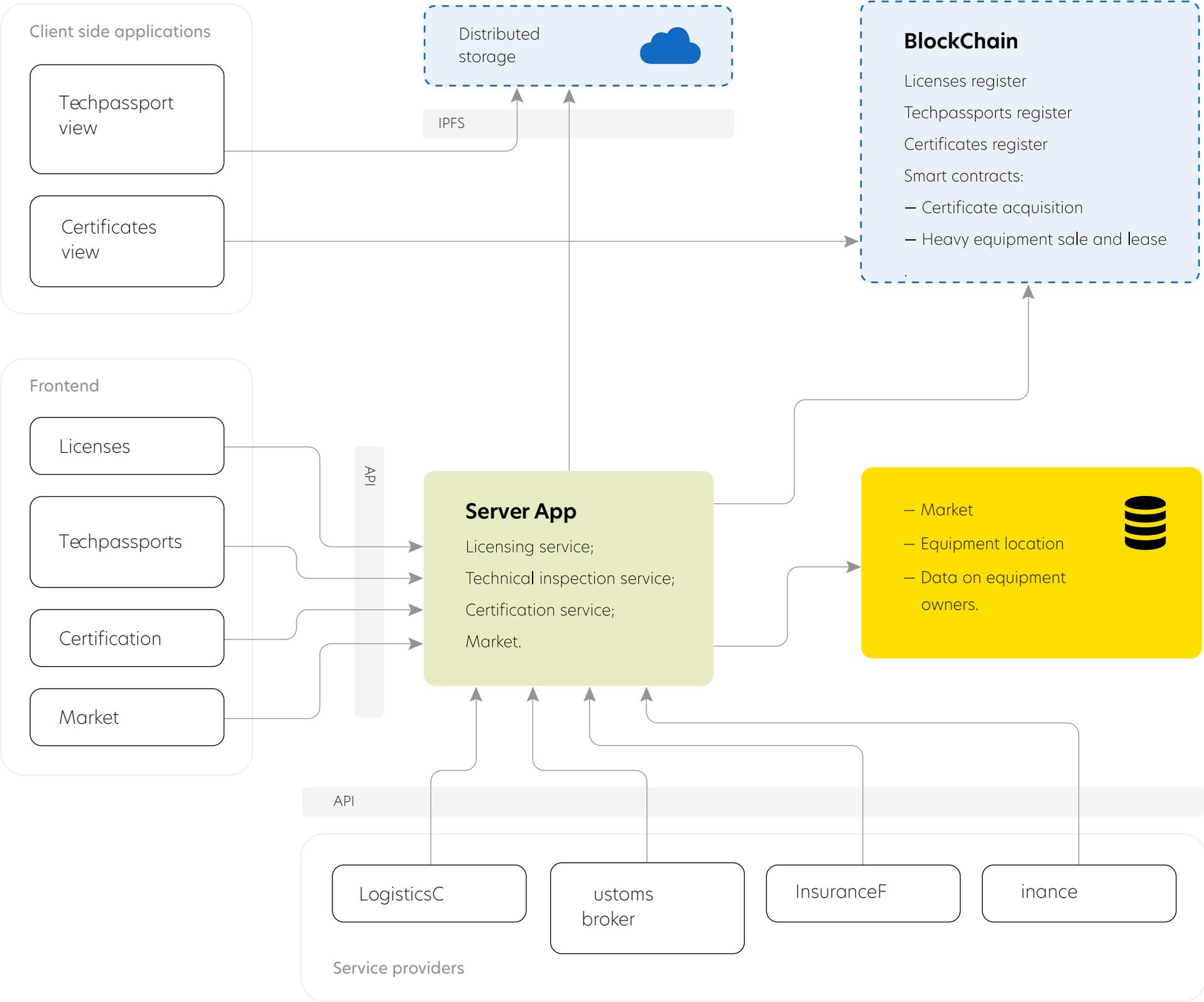
Therefore, the infrastructure of these projects is now largely presented on the US market and only partially in other regions, including Europe. Market experts believe that the main value these platforms provide for buyers is trust in the information about the equipment presented there.

IronBlock model

The IronBlock Market model is new to this industry. It is using UBER technologies in the maintenance and transaction support sector, combining them with blockchain technologies, which in turn provides great foundation for scaling up and instills trust in all participants. Whereas the competing models, in contrast to ours, requires significantly higher transaction costs and resources.



The IronBlock Platform Architecture Solution Project



Use of Blockchain in the Project

Main functions of blockchain in the project:

1. Creation and storage of issued certificates and detailed information register.
2. Creation of techpassports register and a ledger recording every instance of maintenance service.
3. Smart contracts are used to secure Escrow transactions and compliance with conditions of making changes to registries.

Problems we solve with blockchain:

1. Prove the issued certificates authenticity, their date of issue and technical information.
2. Preserve and autonomously store data about maintenance certificates and records, serve as an unfaillable storage for Techpassports service history data and machinery condition so that can't be lost by a flip of the wrong switch.
3. Secure and guarantee compliance with contractual obligations by all participants, providing a simple way of mutual settlements in cross-border transactions.

Machinery state certificates.

Every certificate is registered on the Ethereum blockchain.

The register records:

Certificate information hash.

Date of issue.

Link to the original certificate.

Service license data, according to which certificate was issued.

The certificate confirms the validity of technical condition data when it's placed on the market or other platforms.

Techpassport.

Every Techpassport is also put on the common register of issued techpassports on the Ethereum blockchain.

The register records:

Hash information about every maintenance and inspection.

Date of every maintenance and inspection.

Link to stored information on maintenance and inspection.

The information collected during maintenance (including visual inspection data, instrument readings, photos and video) will be placed in the distributed storage and accessible via the link in the registry.

Escrow of transactions

Escrow of transactions is provided by the fulfillment of smart contract terms.

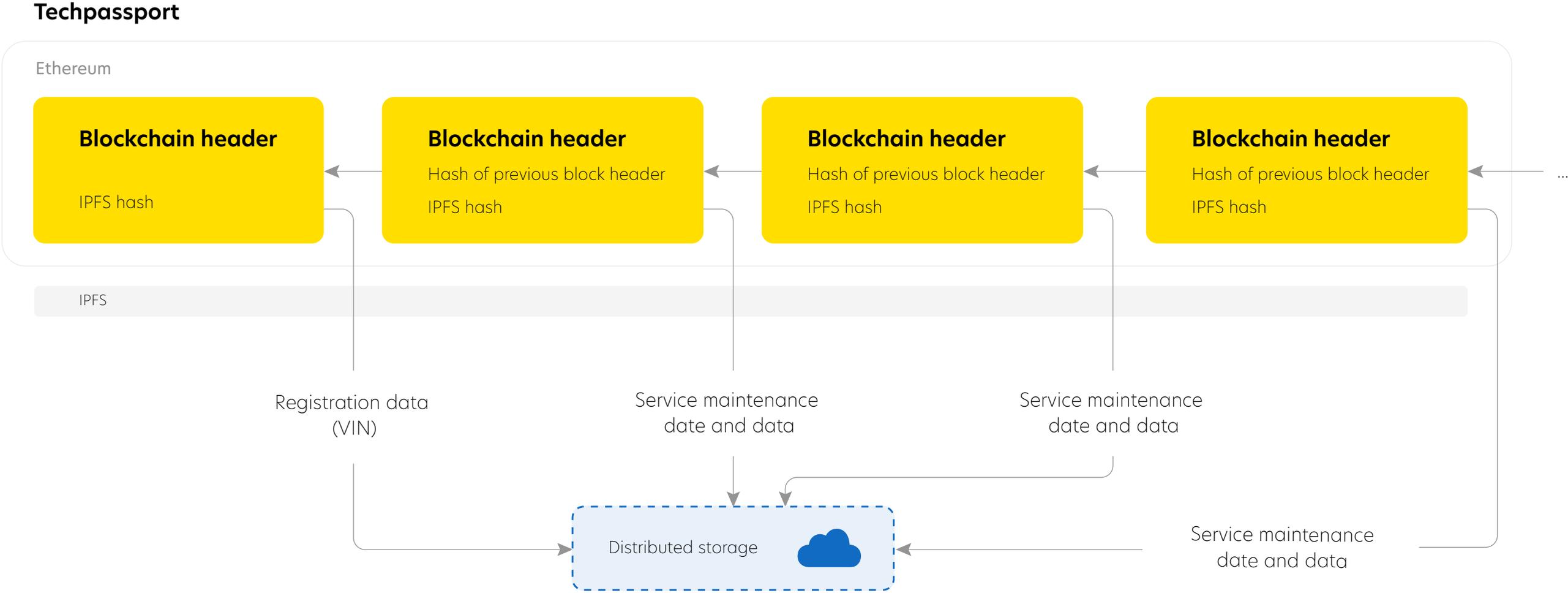
Multi-level confirmation of transaction stages sequential fulfillment.

Use of financial instruments (L/Cs, escrow, etc.) using open smart contracts and IRB Tokens.

Implementation of cross-border settlements using crypto-currencies.

The certificate is generated automatically in case of regular use of Techpassport.

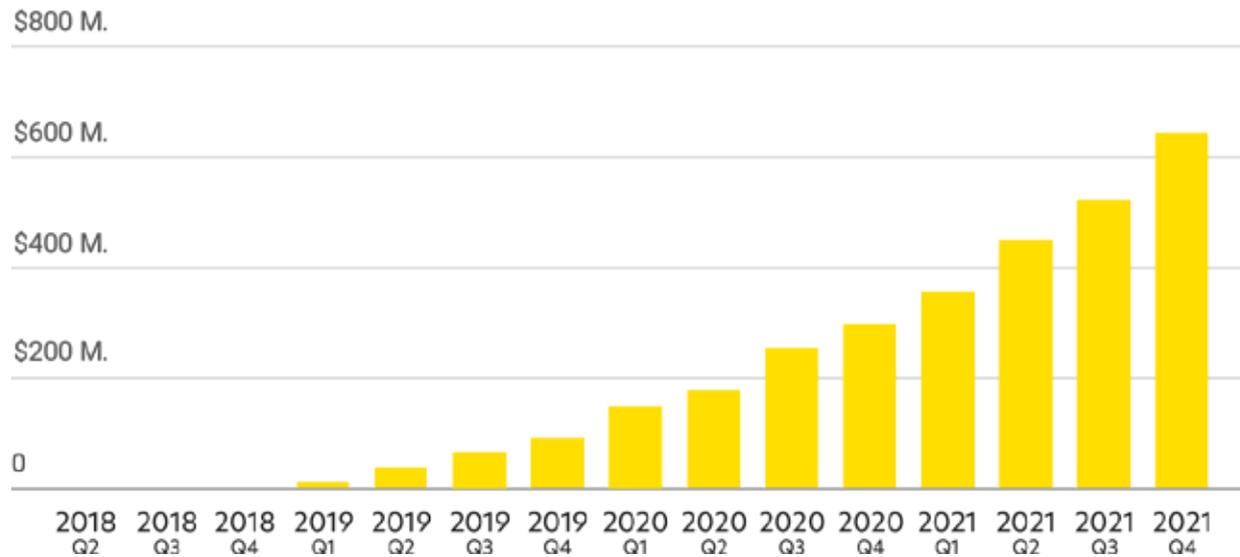
Blockchain use in creating a Techpassport



5. Relevant platform capabilities for different market players

(Using API integration or through the platform interface)

Business model IRB token volume in USD



IRB revenue sources:

1. Certification fee, \$100+ at the IRB exchange rate;
2. % fee from sales: 5%;
3. % fee from rentals: 10%;
4. % fee from certifications: 10%;
5. % fee of maintenance services (TechPass): 10%;
6. % fee of accompanying services: 5%.

Transactions

Transactions will be performed in IRB tokens at current exchange rates as well as in fiat money. Internal interactions and payments of the platform commissions will be performed in IRB tokens only.

Relevant platform capabilities for different market players

Machinery owners

1. Buyers' trust on a global scale.
2. More favourable sale prices.
3. Contractual obligations compliance guarantee.
4. Maintenance processes optimization spanning the entire lifecycle.

Machinery buyers and leaseholders

1. Guarantees of information validity and compliance with contractual obligations.
2. Optimal prices with middlemen out of the picture.
3. Service history verification.
4. Maintenance processes optimization spanning the entire lifecycle.

Leasing companies

1. Equipment condition and service quality monitoring during its lease.
2. Fast sales for favourable prices when the lease is expired.
3. Access to a verified equipment catalog for fast equipment purchase without middlemen.

Credit organizations

1. Quick machinery condition and price evaluation for a loan.
2. Lower expenses on finding and attracting clients.

Service centers (Type 1 IronBlock license)

1. Service centers will receive inspection and maintenance orders as part of the certification process for the Techpassport.
2. Revenue from selling consumables and spare parts.

Agents (Type 2 IronBlock License)

1. New confirmed orders from transactions.
2. Progressive commission rate depending on ranking and number of accomplished orders.

Logistics companies and customs brokers

1. API integration with the platform and acquiring regional and international clients for heavy equipment logistics.
2. Cutting customer acquisition expenses, increased revenue.

Insurance companies

1. Access to verified machinery condition data for faster insurance terms decision.
2. Inflow of heavy equipment insurance clients.

Equipment manufacturers

1. Access to real post-warranty maintenance data.
2. Extending spare parts sales network, ability to makes supply chain schedules

Equipment listings and other online platforms

1. Increased trust in the platform listings data.
2. Ability to serve as a Marketplace and earn additional revenue.

6. Roadmap

Q2 2012 - Start of offline business in Ekaterinburg and the Sverdlovsk Region (Russia)* in sales and servicing specialized machinery.

Q1 2017 - Reached a 250+ units milestone of special purpose and heavy machinery sales in 5 years.

Q2 2017 - collection, analysis and consolidation of global special-purpose machinery market data to develop the IronBlock platform.

Q3 2017 - Creation of IronBlock, building the team to launch the project and attract partnerships. Platform design drafts.

Q4 2017 - Pre ICO launch, platform development launch, Licensed service centers and IronBlock agents Whitelist formation, building and developing partnerships with the largest special purpose machinery owners in Russia to prepare for the local launch.

Q1-Q2 2018 - The ICO campaign: general sale of the IRB tokens. Development of a legal system to manage and implement the project globally. Finalization of team building.

Q2 2018 - Platform alpha version launch in Russia. Whitelist formation and signing international partners to launch IronBlock on the key European, Asian, and other regional markets.

Q4 2018 - Global commercial launch after adaptation to local legislations.

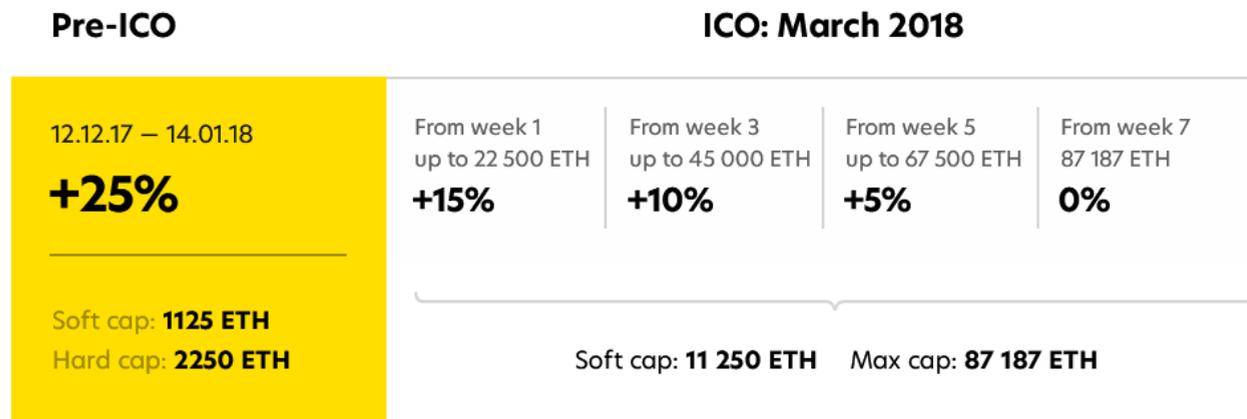
2019 - Scaling up and further project development, the platform launch for the related special purpose machinery and equipment sectors: freight transports, railway rolling stock, aviation industry, and other.

2021 - Global IronBlock sales, leasing, service market share up to 5%.

Before 2025 - Ongoing project development with current and emerging trends of the specialized machinery and cryptocurrency markets in mind. Growing IronBlock market share, in-house services expansion: logistics, financing, customs brokerage etc.

*- The most industrialized region in Russia, one of the most resource-rich places on Earth.

7. ICO Structure



ICO will be run in two stages - PreICO and ICO.

PreICO

We plan to run the Pre ICO 12 December through 14 January 2018. The total available supply of IRB tokens during that period will be 10.42 million (including the 25% bonus)

Why we are fundraising:

- To prepare for and launch the ICO stage (early March 2018) - 65% of raised funds;
- Additional staffing (IT, маркетинг) - 10 % of raised funds;
- To create a working prototype of the service, develop the platform - 10%;
- Implement a legal project management system - 15%.

Soft Cap: 1125 ETH (If the Pre ICO campaign fails to raise enough funds, all contributions will be returned to crowdsale participants according to the smart contract terms)

Hard Cap: 2250 ETH

Early participation bonus: +25% IRB tokens

ICO

We plan to launch the ICO early March and run it for two months. 339.6 million IRB tokens will be available for purchase.

The purpose of fundraising: to implement the project development plan until IronBlock reaches the breakeven point.

1. Commercial version features development and implementation.
2. Creation of a global offline infrastructure, launch of local representatives in other legal frameworks and international markets.
3. Development of licensed service centers and agents network.
4. Marketing and promotion of the platform among buyers and sellers.
5. Global support service center launch.
6. Development and integration of a partnership network including logistics, insurance, customs brokerage and leasing.
7. Product line extension and related markets entry (freight transports, railway rolling stock, aviation industry, and other)

Soft Cap:* 11 250 ETH (If the ICO campaign fails to raise enough funds, all contributions will be returned to crowdsale participants according to the smart contract terms)

Hard Cap: 87 187 ETH

Early participation bonuses on different stages are are: +15% +10% and +5% IRB tokens.

IRB tokens distribution chart

Распределение токенов



The total supply of IRB tokens during the ICO will be 500 million. Further emission of tokens is strictly prohibited and is not covered by the smart contract terms.

70% of token supply, or 350 million IRB tokens will be available for buyers the during ICO.

15% of tokens will be kept to motivate new team members for global expansion and further ecosystem development.

9% will be distributed among the project founders and the launch team, and will not be available for sale for 1 year after the ICO launch.

4% of IRB tokens will be distributed among the project advisors based on the options and the roadmap.

2% will go towards the bounty campaign and PR during the ICO.

According to the smart contract terms, tokens not sold during the ICO will be destroyed.

8. IRB Token



Token name: **IRB**

Blockchain platform: **Ethereum**

Standard: **ERC 20**

Terms and conditions:

All unsold tokens for general public sale will be annulled after the ICO on the smart contract terms. The tokens allocated to the team will not be available for sale for 1 year.

Token exchange rate: **100 IRB = 0.027 ETH**

Currency of purchase: **ETH**

Minimum purchase: **400 IRB**

Maximum purchase: **Unlimited**

The smart contract and the IRB tokens are ERC20-compliant and are based on the Ethereum blockchain.

The IRB token is a utility token that serves as a payment unit for the in-platform services, commission fees, and settlement payments between the platform participants.

9. Token value growth drivers

Our main goal is to create a global IT infrastructure for the heavy equipment market where the IRB token will become one of the main payment units.

As mentioned above, nowadays there is no single global solution that would provide sufficient validity of data on leased or rented heavy equipment and solve the lack of trust issue. The IronBlock platform will provide buyers with valid data on the traded equipment while removing the financially taxing need for buyers to transport machinery to the auction platform, thus cutting expenses significantly. There is little doubt it will rapidly grow its audience and become popular on the equipment sales market.

Global development of the cryptocurrencies will help the project development and promote the IRB token. Cryptocurrencies including IRB tokens will make interactions between buyers and sellers of heavy equipment faster and more efficient even if they are located on different continents. Moreover current cryptocurrency market trends show constant decrease in transaction fees, which is beneficial for the equipment buyers. Development of the cryptocurrencies in the world will promote their use in the global economy and facilitate the shift to cryptocurrency payments between all players.

The growing popularity of the IronBlock platform and the amount of equipment on sale will lead to the growth of demand for IRB tokens as the heavy equipment lease/sale market size exceeds the total IRB token emission at its current price by more than 10,000 times. This demand will drive the IRB token value growth upwards on the exchanges trading it after the ICO. We intend to continuously increase the presence of the token on the biggest exchanges.

The loyal platform users will benefit from saving tokens for later payments. The ability to use IronBlock services at a discount, as well as loyalty programs and promotions, will be given only for IRB token payments, which will also increase its value. This hand in hand with well designed economic model will create additional tokens deficit further driving its value up.

10. "True and Open" IronBlock Policy

IronBlock is a global decentralized blockchain platform based on the principle of open and verifiable information.

IronBlock guarantees full, verifiable, open and transparent information about the financial activity inside the project, including the money raised during Pre-ICO and ICO.

The aforementioned principles are implemented through:

- Token holders' 24/7 online access to the up-to-date financial data and state of affairs at IronBlock;

- Releasing the files from yearly audits at the Big Four companies (PriceWaterhouseCoopers, Deloitte Touche Tohmatsu, E&Y, KPMG);

- Monthly public profits and expenses reports with spending commentary;

- Releasing various information on IRB token holders' demand, in a timely enough manner.

The implementation of the aforementioned mechanisms allows us to make the IronBlock platform as transparent as possible, cultivate and maintain trust in our project, and keep it at the top of our priority list.

11. Team

Shikunov Alexander – CEO, Co-Founder

Responsible for project strategy, platform scaling, and partnerships. Alexander has been involved in the sales and service market for specialized machinery for over 5 years. He boasts over 20 years of entrepreneurial experience, starting various businesses from scratch.

Shmyrin Evgeniy – CBDO, Co-Founder, responsible for implementing the platform and commercial services development.

An IT businessman, Evgeniy has worked at both Russian and international companies, and has quite a few successful businesses under his belt, some of them he started from scratch. His responsibility spans across developing and implementing business strategies, current project planning, roadmap progress supervision, and development strategies correction. Graduated from Moscow International Higher School of Business and Moscow Aviation Institute (National Research University), Automated control systems and flight data processing faculty.

Gorelov Alexey – CFO, Co-Founder.

Alexey specializes in financial management, comptrolling and corporate management. Within the project he's responsible for finances and investor relations. Alexey's experience in this field spans over 15 years. Has worked with the stock market and stock exchanges, as well as analytical agencies. He will establish relationships with investment and hedge funds, private investors and professional stock market and cryptomarket players. He's also responsible for comptrolling the project. Graduated from National Research University of Electronic Technology; Economics, Management and Law Institute, majored in Financial management, has a mini MBA degree in Corporate management, studied Advanced Financial Management Programme in London, and Business Processes in Management Accounting in Austria.

Ternov Georgiy – CLO, chief legal advisor.

Graduated from Kutafin Moscow State Law Academy, Institute of law. Responsible for legal support, has working experience of over 10 years in this field, Georgiy is also supervising our corporate law processes, and other corporate activities. Has experience in issuing securities, drawing up contracts for various deals, structuring complex deals. Provides comprehensive legal support to the company.

Pakhtusov Nikolay – CTO, a programmer and a blockchain and neural networks expert.

Graduated from Ufa State Aviation Technology University. An IT and mathematics specialist, Nikolay is an experienced and long standing programmer. Author of analytical programs used in commercial activity of the leading Russian enterprises, he has valuable experience in developing and integrating software and electronic devices. Has worked for a few cryptocurrency projects both in Russia and the US as a developer and IT advisor.

Drozdov Alexey – Product designer, e-commerce expert.

Responsible for customer experience and platform interface development. Specializes in designing high-load services and e-commerce solutions. Boasts extensive experience in building e-commerce services and client-side applications, as well as cloud services. Worked with TASS, Ulmart, DHL, Acronis, TNK, Panasonic, Honda, Nike, UralSib Leasing.

Technical side development and blockchain integration is made possible by our developer team (over 70 people)

Specializing in complex IT systems and web service development, the team is well experienced in creating chat-bots, machine learning programs and blockchain technologies. The team has a few Multichain based system under its belt, including secure data exchange systems, voting systems, and a few Ethereum blockchain projects for the banking sector.

12. Legal disclaimers and risks

The purpose of this White Paper is to present the IronBlock project (IRB) and IRB Token to potential token holders in connection with the proposed Token sale. The information set forth below may not be exhaustive and does not imply any elements of a contractual relationship. Its sole purpose is to provide relevant and reasonable information to potential IRB Token holders in order for them to determine whether to undertake a thorough analysis of the company with the intent of purchasing IRB Tokens.

IRB Token is a utility token. It gives token holders opportunities to benefit, nevertheless, it takes efforts and labor to earn any. IRB Token is not a security, commodity, and its holders are not investors or commodity or security holders. Nothing in this White Paper shall be deemed to constitute a prospectus of any sort or a solicitation for investment. This primary offering does not pertain in any way to an offering to buy any securities in any jurisdiction. This White Paper is not composed in accordance with, and is not subject to, laws or regulations of any jurisdiction, which are designed to protect investors. Certain statements, estimates and financial information contained in this White Paper constitute forward-looking statements or information. Such forward-looking statements or information involve known and unknown risks and uncertainties, which may cause actual events or results to differ materially from the estimates or the results implied or expressed in such forward-looking statements. You participate in the Initial coin offering IRB (ICO IRB) solely on a voluntary basis. In the legal sense, ICO IRB is a crowdfunding donation campaign. To participate in it you have to accept terms and conditions of the IRB crowdfunding donation campaign. Before purchasing IRB Tokens, it is recommended that each participant carefully weighs all the terms and risks detailed in this White Paper. Besides, your guarantees and assurances that you provide when accepting the terms and conditions of the IRB crowdfunding donation campaign are essential for participation in ICO IRB, and we shall take them as true and intentional. If you cannot provide any of the aforementioned guarantees or assurances, we have to restrict your participation in ICO IRB and the purchase of IRB tokens.

IRB Token does not confer rights in any form to any ownership, distribution (including but not limited to profit), redemption, liquidation, proprietary (including all forms of intellectual property), or other financial or legal rights, or any other rights to IRB. IRB Token confers no creditor or lender status, nor is it binding IRB and IRB affiliates with obligations of return of funds raised by the ICO IRB. Funds raised by ICO IRB are not insured. There is no public, private or state insurance representative a token holder can apply to. The Blockchain and ICO related technology may not be a subject to control and supervision in some jurisdictions, nevertheless the situation may change, which poses certain risks for the token holders. IRB Token holders should consider the risks and keep an eye on legislation changes in the countries they reside in.

We notify residents of the following countries: USA, Canada, South Korea, China and Singapore, that IRB Token fails the Howey test:

- IRB Token holders are not paid dividends;

- IRB Token is not a security and IronBlock is not a security issuer and does not pay the holders any loan interest;

- IRB token holders are given opportunities to benefit, nevertheless, it takes efforts and labor to earn any, so there is no guaranteed income.

By buying IRB Tokens you imply your full understanding of legal opinion and position of IRB, and act on your own account. IRB bears no responsibility for possible claims from inspecting and regulatory bodies of USA, Canada, South Korea, China, Singapore, and in any other case of change in IRB Token status interpretation.

This legal notice is the primary official source of information. All previous agreements, discussion presentations guarantees and other are of no force or legal effect after the signing of this legal notice.