

Analyzing the first AI + manufacturing stock

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On the one hand, compared with peer suppliers, Alnnovation's differentiation and specialization in the field of AI + industry are reflected in "brain, eye, hand and foot". On the other hand, as evident in the financial data, the industry competition tracks and business models also determine how it differs with traditional AI companies in "light vs. heavy."

On January 3, Qingdao Alnnovation Technology Group Co., Ltd. ("Alnnovation" [创新奇智]) once again applied to the Hong Kong Stock Exchange for listing, updated its prospectus, and opened its public offering this week. According to market news, the company has obtained a full subscription for the international listing.

In February 2018, Alnnovation was officially established, with Kai-Fu Lee serving as chairman. This is the first and only time that he has served as chairman of an AI company in which he has invested.

Different from the "AI Four Little Dragons", which were established earlier and focused on "black technology" and security applications, Alnnovation has been oriented to enterprise-level applications from the beginning, mainly for the manufacturing and financial services industries. The person in charge of the company does not have a research and development background, but an entrepreneur with more than 20 years of experience in corporate services.

It took only three years for Alnnovation to go from formation to becoming a unicorn. In less than four years, the company's commercialized revenue already ranks among the top AI startups.

According to Sullivan's data, in terms of revenue in 2020, Alnnovation has become the largest AI technology-driven solution provider in China's manufacturing AI solutions market. It is the 3rd largest AI technology-driven solution provider in China's enterprise AI solutions market.

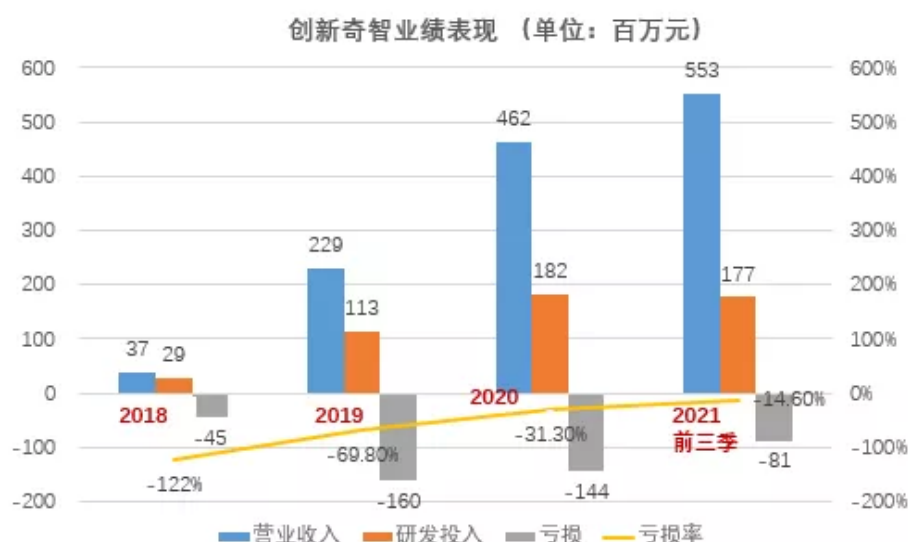
This time it has hit a new level again, and Alnnovation is expected to become the first "AI + manufacturing" stock listed on the Hong Kong Stock Exchange.

1. Read the fundamentals of data

Since its establishment in 2018, as of the last round of financing before listing on January 3, 2022, Alnnovation has conducted a total of six rounds of financing. The angel round of financing exceeded 100 million, and its previous D round of financing received a second phase investment from SoftBank Vision Fund.

Kai-Fu Lee serves as the chairman of Chuangxin Qizhi but does not directly hold the company's stock. Sinovention Ventures holds about 30.01% of the total shares and is the single largest shareholder. Other major shareholders include CICC with 16.7% and Softbank with 7.12%.

The company's main revenue comes from product and solution sales, data solution services. The data shows that in 2018, 2019, 2020 and the first nine months of 2021, the operating income was 37 million, 229 million, 462 million and 553 million respectively (all figures in Chinese RMB).



Caption: Based on the company's prospectus. 2021 data goes to September 30.

Alongside revenue growth, Alnnovation cannot avoid losses. Excluding the impact of non-operating items such as share-based payment expenses and financial expenses arising from redeemable share-based financial liabilities, the adjusted net loss gradually narrowed to RMB 45 million, RMB 160 million, RMB 144 million and RMB 81 million, respectively. The adjusted net loss ratio has dropped significantly from 121.6% in the early stage to 14.6%. From a trend point of view, the losses are rapidly being smoothed out by the cost reduction brought about by the growth of business income and economies of scale. It is doing well in reducing losses.

The data shows that losses are mainly due to the continuous expansion of the company's business scale, and the increase in general administrative expenses and R&D expenditures. Among them, Alnnovation has invested a lot of resources in the research and development of AI technology, including computer vision and machine learning.

For example, R&D expenditure in 2018 was 29 million, and R&D expenditure in the first nine months of 2021 has reached 177 million. In the past fiscal year, research and development spending still constituted the company's largest expenditure, and the primary use of the funds raised in this IPO is also research and development.

According to the prospectus, the company has about 255 employees engaged in artificial intelligence and technical intelligence, accounting for 69.1%. At the technical level, R&D efforts are focused on areas with potential commercialization opportunities, fewer barriers to competition, and cost savings – so as to achieve the best optimization of company resources. For example, smart molten metal transport and defect detection solutions have been recognized by manufacturing customers and end users.

Continued investment in R&D also brings rich intellectual property rights. The company has applied for 634 AI-related patents and successfully registered 126 AI-related patents, including 79 invention patents. It is at the leading level among its industry peers.

Although not yet profitable, the proportion of the company's administrative expenses and R&D costs is narrowing. As a company that has only been established for more than 3 years, its operating efficiency is already at an excellent level in the industry.

During the reporting period, the company's gross profit increased steadily, amounting to 23 million, 72 million, 134 million and 170 million respectively. Gross margin has stabilized at around 30% since 2019. Among them, September 30, 2021 increased by more than 2% compared with the same period of September 30, 2020, and the gross profit margin increased by nearly 1.8 percentage points compared with the full year of 2020.

	自2月6日至 12月31日 止期間	截至12月31日止年度		截至9月30日 止九個月
	2018年	2019年	2020年	2021年
收入增長.....	不適用	515.9%	101.8%	85.8%
製造業.....	不適用	476.5%	146.3%	250.5%
金融服務業.....	不適用	890.7%	243.0%	27.2%
其他行業.....	不適用	434.1%	(11.8)%	20.0%
毛利率 ⁽¹⁾	62.9%	31.3%	29.1%	30.9%

Image above: first row gives revenue increase (in percent) for 2019, 2020, 2021; Second, third, and fourth row gives revenue increase by manufacturing, financial services, and other sectors. Last row gives gross profit increase figures.

The company's manufacturing revenue has become the main force of the company's revenue, but also because of the integrated software and hardware business model, this will naturally affect the gross profit level.

Regarding variation in gross profit margin, Alnnovation explained in the prospectus as follows:

This is mainly because most of the AI-based products and solutions sold in 2018 were software-based solutions. Since 2019, the sales mainly involve software and hardware integration solutions involving more hardware components, and the gross profit margin of the latter is usually lower than that of the former.

Judging from the change in the cost of sales, the cost of materials has indeed increased significantly since 2019, because more hardware purchases are involved. The high cost of purchasing hardware will naturally increase operating costs.

In fact, gross profit margin is usually determined by the industry track and business model of the company. Some companies choose the SaaS model, some take the platform road, and some focus on the solution market.

For example, SenseTime is positioned as an artificial intelligence software platform enterprise, while Alnnovation is positioned as a provider of artificial intelligence products and solutions, and its focus on manufacturing is a typical "scenario-heavy" model.

Generally speaking, all AI solution products integrate software, hardware, and technical services, but the scenarios can be "light" or "heavy." Compared to typical "light scenarios" such as security, new retail, and autonomous driving, industrial manufacturing belongs to the "heavy scenario" of AI applications. The heavier the scenario, the higher the proportion of hardware in the final AI solution, which will directly determine the gross profit margin.

At the same time, the business model adopted by an enterprise is closely related to the maturity of the industry.

China's manufacturing market demand is highly fragmented and non-standardized. Selling only technical solutions, like selling conveyor belts to blacksmiths in the late 19th century, simply won't work. In anticipation of the Industrial Revolution, a factory needed to be built around the conveyor belt.

For companies trying to get into the game, hardware and software are equally important. Usually the first thing to do is to lay the hardware infrastructure. Standardization at the hardware level will bring about standardization at the software level. If hardware is not standardized, the standardization of software is empty talk.

The "software and hardware integration" solution can usually be flexibly integrated into the original production line of the enterprise without special transformation of the production line, which can reduce the difficulty and threshold for enterprises to apply AI, and can also result in faster completion of project delivery.

This is also why in the past few years, whether it is a large Internet company or a startup company, when it gets involved in the vertical field, "software and hardware integration" almost always accompanies this move. Internet companies such as Baidu and Tencent have also launched industrial quality inspection equipment. It is in this way that Alnnovation has built its own moat.

In the analysis of the health of the company, in addition to revenue, gross profit, etc., important data also includes comprehensive cash flow performance.

When a company's book capital is not enough to support a year, you don't know how confused it is. Alnnovation does not have such concerns, and the company's cash flow is relatively stable.

As of September 30, 2021, the total cash balance of 1.65 billion is sufficient to cover its operating activities and provide sufficient liquidity for expanding business operations.

	於12月31日			於9月30日	於11月30日
	2018年	2019年	2020年	2021年	2021年
					(未經審核)
	(人民幣千元)				
流動資產					
存貨.....	3,043	32,327	55,310	43,359	66,482
預付款項及其他應收款項....	3,594	23,190	27,329	46,833	92,982
貿易應收款項及應收票據....	16,241	120,737	189,554	296,353	221,385
按公允價值計入其他全面 收益的金融資產.....	—	6,446	3,937	27,093	25,493
按公允價值計入損益的金融 資產.....	14,000	—	—	—	—
應收關聯方款項.....	100	2	2,321	8,606	8,695
受限制現金.....	7,447	2,979	1,491	206	2,697
現金及現金等價物.....	74,396	605,631	1,042,502	1,654,623	1,624,019
流動資產總值.....	<u>118,821</u>	<u>791,312</u>	<u>1,322,444</u>	<u>2,077,073</u>	<u>2,041,753</u>

Caption: consolidated cash flow performance

In recent years, the company's inventory and inventory amount have increased significantly. During the reporting period, the inventories of Alnnovation were 3.043 million RMB, 32.327 million RMB, 55.31 million RMB and 43.359 million RMB respectively.

The company's inventory is mainly work-in-progress and raw materials, which is a symbol of the opening of the channel market, indicating that the company's AI products and solutions have increased sales, and the inventory of new items has increased.

Inventory turnover days were 36 days, 41 days, 49 days and 35 days. The inventory turnover days of Alnnovation are at a lower level than some AI companies that mainly focus on 2G (to-government) business, where inventory turnover periods have been prolonged due to the strategic stocking amidst Sino-US trade frictions, and the inventory turnover days of Alnnovation are at a lower level.

The opening of the business situation is also accompanied by an increase in accounts receivable. During the reporting period, the accounts receivable of Alnnovation were 16.24 million, 120 million, 190 million and 296 million respectively. This is related to the characteristics of the industry itself. Manufacturing customers generally require a longer settlement period than other industries.

Turnover period for receivables also increased accordingly, at 76 days, 115 days, 135 days and 137 days. Alnnovation's number of days is comparatively low and sits at a low level among AI companies, compared with the accounts receivable cycle of AI companies that focus on 2G (to-government) business, where the high is more than 290 days and the low is at a little more than 130 days.

In addition, the aging of most of the company's accounts receivable is less than 6 months. As of September 30, 2021, about 85.3% of the aging of trade receivables is less than 6 months.

2. The business experience of "AI + manufacturing"

When the commercialization of new technologies is difficult, the choice of industries and scenarios is very important.

This so-called “scenario capability” is not entirely a sales issue, but also means how to be forward-looking in carving out a certain segment, as well as having the opportunity to form a singular or half monopoly.

This is why, when machine vision AI companies frantically gathered in the fields of security and retail, Alnnovation became the first batch of people that dares to do "AI + manufacturing".

At present, manufacturing is a field with huge market volume and few players. However, if China's manufacturing industry wants to continue to develop, intelligent manufacturing that integrates information and communication technology with advanced manufacturing technology is the only way. Improving production efficiency and moving towards high-end manufacturing are also the paths that manufacturing powers such as Japan and Germany have taken.

At the end of 2021, eight departments including the Ministry of Industry and Information Technology jointly issued the "14th Five-Year Plan for the Development of Intelligent Manufacturing," pointing out that by 2025, most manufacturing enterprises above designated size will be digitalized and networked, and backbone enterprises in key industries will have started to apply intelligentization.

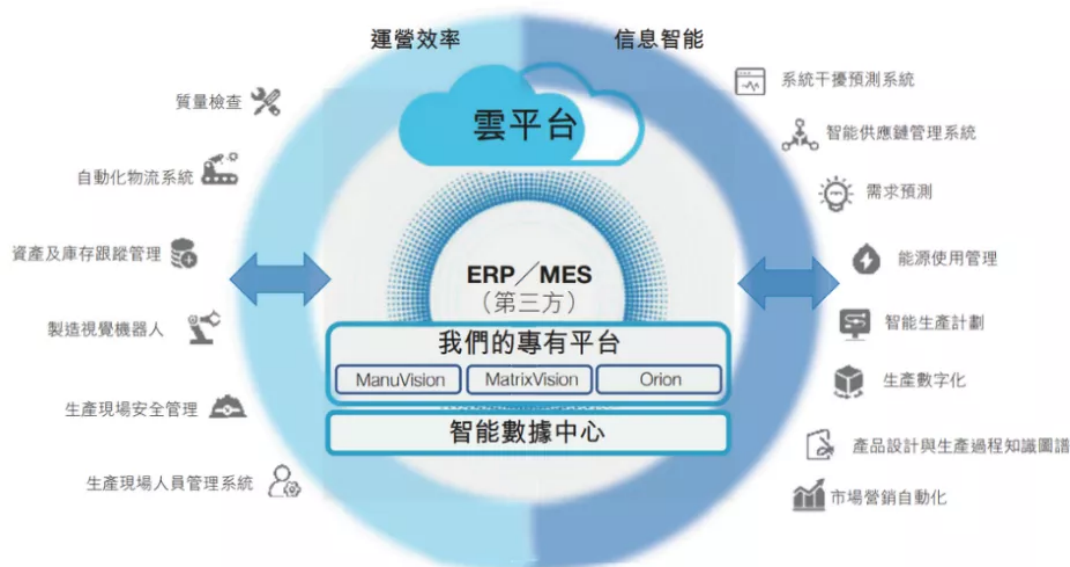
The plan also pointed out that to enhance the supply capacity, the market satisfaction rate of intelligent manufacturing equipment and industrial software should exceed 70% and 50% respectively, and to cultivate more than 150 system solution suppliers with high professional level and strong service capabilities.

Artificial intelligence solutions can be helpful for and permeate aspects related to "consistency of product quality control, process management efficiency, labor costs, safety control, and integrated management capabilities" of manufacturing enterprises.

	自2月6日至 12月31日 止期間		截至12月31日止年度				截至9月30日止九個月			
	2018年		2019年		2020年		2020年		2021年	
	金額	%	金額	%	金額	%	金額	%	金額	%
(未經審核)										
(人民幣千元，百分比除外)										
製造業	13,636	36.6	78,429	34.2	193,098	41.8	80,153	26.9	281,095	50.8
汽車裝備	238	0.6	1,956	0.9	2,382	0.5	981	0.3	116,358	21.0
3C高科技	4,140	11.1	17,491	7.6	36,504	7.9	11,403	3.8	77,846	14.1
OLED面板製造	—	—	—	—	36,527	7.9	—	—	13,539	2.4
工程及建築	—	—	1,887	0.8	4,044	0.9	1,968	0.7	1,877	0.3
鋼鐵冶金	—	—	5,165	2.3	31,418	6.8	188	0.1	17,354	3.1
能源電力	—	—	—	—	19,240	4.2	19,017	6.4	4,667	0.8
其他 ⁽¹⁾	9,258	24.9	51,930	22.7	62,983	13.6	46,596	15.6	49,454	9.1
金融服務	5,356	14.4	53,539	23.4	183,520	39.7	151,577	50.9	192,803	34.9
銀行業	—	—	17,365	7.6	40,120	8.7	10,221	3.4	100,077	18.1
保險	3,632	9.8	28,736	12.5	117,145	25.3	115,226	38.7	17,727	3.2
其他 ⁽²⁾	1,724	4.6	7,438	3.2	26,255	5.7	26,130	8.8	74,999	13.6
其他行業 ⁽³⁾	18,216	49.0	97,173	42.4	85,706	18.5	65,909	22.2	79,117	14.3
總計	37,208	100.0	229,141	100.0	462,324	100.0	297,639	100.0	553,015	100.0

Caption: The proportion of revenue generated by AI products and solutions in the manufacturing industry continues to increase, accounting for a large proportion of total revenue.

The core track of "AI + manufacturing", the company is deeply engaged in multiple vertical segments such as panel semiconductors, iron and steel metallurgy, energy and power, engineering and construction, automotive assembly, high-tech/3C, etc., mainly serving the transformation needs of operational efficiency and information intelligence.



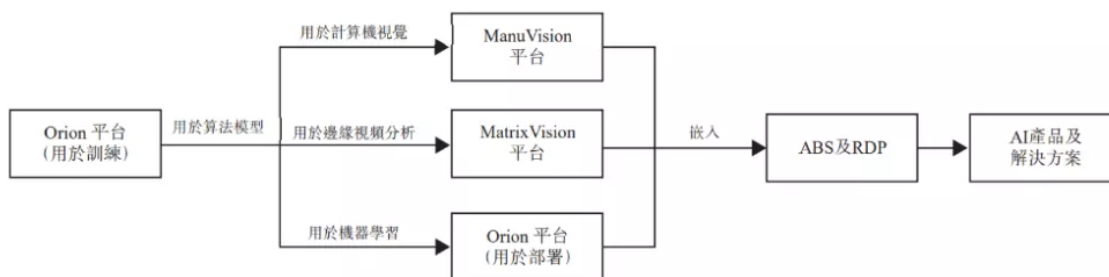
Caption: AInnovation Intelligent Manufacturing System (AIMS)

The core track of "AI + Finance", the company is not engaged in front-end services such as risk control and marketing, but related to IT infrastructure in the insurance and banking industry,

such as intelligent data center construction and operation and maintenance, intelligent hybrid cloud management, etc.

In addition to being very different from the traditional "AI Four Little Dragons", compared with other suppliers in the same industry, Alnnovation is one of the few full stacks that integrates "AI Industrial Vision-AI Industrial Automation-AI Industrial Cloud Platform" provider of artificial intelligence products and solutions.

At the product level, they not only built the machine vision intelligence platform ManuVision and the edge video intelligence platform MatrixVision, but also built the Orion distributed machine learning platform. They are also one of the few companies in China with a proprietary deep learning platform.

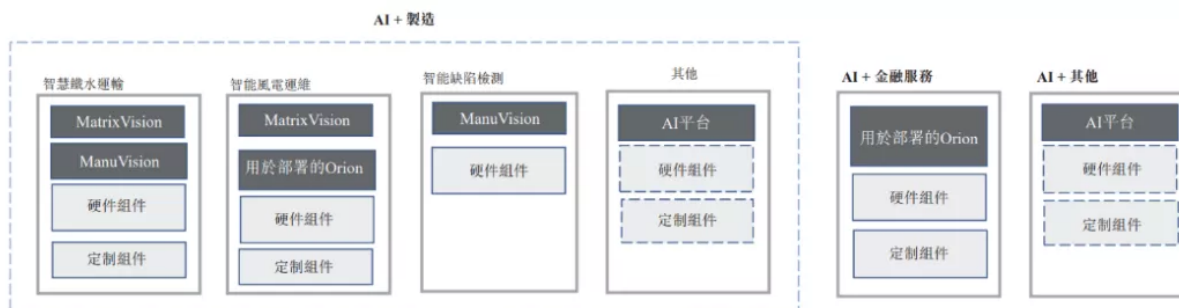


Caption: The relationship between the three proprietary AI platforms

"Our differentiation and specialization in the field of AI + industry is reflected in the 'brain, eyes, hands, and feet'." Xu Hui once explained.

The Orion distributed machine learning platform is like a "brain"; AI industrial vision is like an "eye" responsible for localization, identification, measurement and detection. Moreover, these platforms are not pure software platforms in the traditional sense, but can be combined with the "hands" and "feet" of robots.

For example, ManuVision is compatible with external hardware devices such as industrial light sources, industrial cameras, manipulators, and controllers, functioning as an overall solution for integrated automation.



Caption: How Alnnovation integrates "Lego" bricks into some AI products and solutions.

Contrary to the "top-down" path of early AI companies' "platform first, and then empowerment", Alnnovation did the opposite from the beginning - adopting "bottom-up", that is, "solutions-products-platforms."

Early in the adoption of new technologies, tailor-made solutions are often required to make the technology relevant and bring initial adoption. For AI, customized solutions are still important to establish application relevance, but the key to scalability is to standardize solutions into modular products.

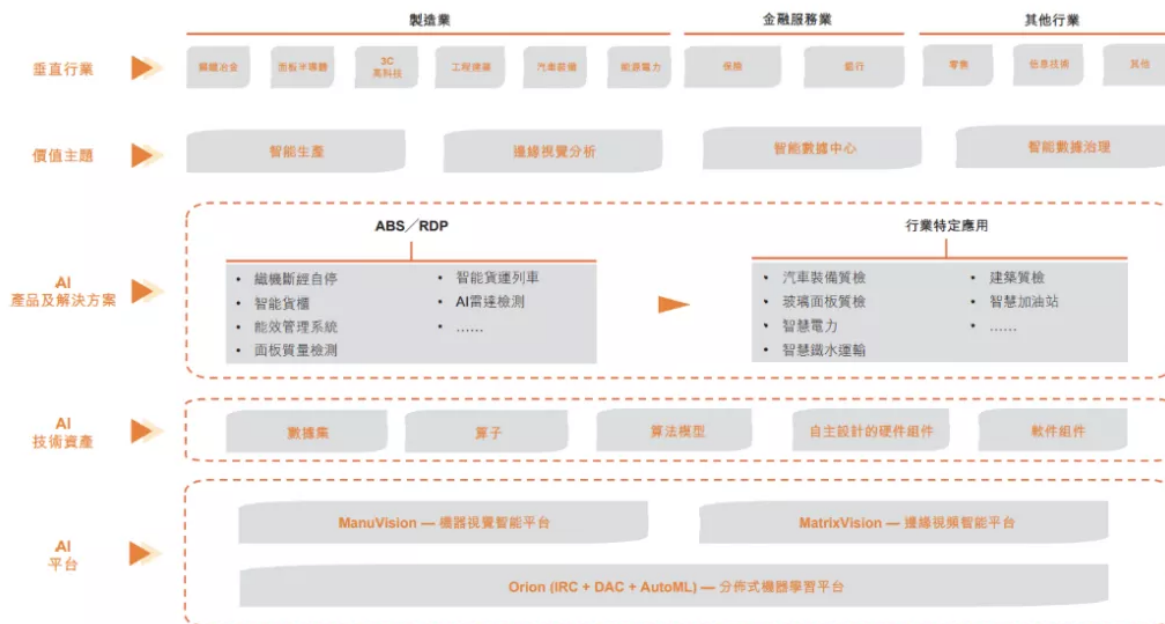
From the very beginning, the company starts from specific application scenarios, and gradually modularizes reproducible elements and industry know-how by cooperating with representative large and medium-sized enterprises in the industry, so as to achieve extended reproducibility. This also avoids going down the path of a system integrator.

Although Alnnovation also has an AI platform, it is different from the platform-based thinking of early AI companies. Alnnovation's AI platform is mainly used as the underlying AI infrastructure for the company to serve customers, and as a sedimentation pool for AI technology assets.

For example, the algorithm models related to defect detection currently developed for the ManuVision platform have increased from 215 categories at the end of June 2021 to 282 categories; the algorithm models related to field inference developed for the MatrixVision platform have increased from 277 categories to 352 categories.

These technical assets are highly condensed, low-coupling, and highly reusable, which can support and achieve efficient project delivery that meets customization requirements. Thanks to these technical assets, some aspects of the workflow can also be automated.

In addition, some technical solutions can be reused in similar application scenarios across domains.



Caption: Alnnovation is not positioned to be a single product supplier or a divergent system integrator, but to deeply cultivate the industry, combining technology focus with industry needs to form a series of product solutions to meet general industry needs.

In practice, they usually transplant the "brain" trained model to the corresponding image or video AI platform, and then embed it into the company's ABS and RDP to meet customer needs on the spot.

The so-called RDP (Rapid Deployment Product) has a relatively high degree of productization and can be rapidly deployed. ABS (Assets-based Solution) is a solution suitable for combining with the customer's industry scenario, and this solution can also be deployed relatively quickly.

However, ABS or RDP products usually have a lower unit price. What should we do for large customers and leading customers?

For example, if you want to do business with a rich and influential family, you are definitely not satisfied with delivering milk, you must also do the laundry, cut the lawn, and finally create a customized, long-term, and connected butler service. This is the Chinese version of IBM.

It is through the use of these reusable, asset-based RDP/ABS portfolio differentiated industry solutions that Alnnovation has the ability to provide long-term services to customers in various scenarios and lock in large customers.

From this, we can also see Alnnovation's strategy to serve customers in the full life cycle of digital transformation, as well as a clear path to improve the overall profitability in the future.

It is worth noting that in addition to being satisfied with its own use, the company is also building an ecosystem through three major platforms.

The prospectus revealed that the company is building an open-architecture technology platform to attract more participants in the AI industry value chain and deepen cooperation with various industry participants.

ManuVision and MatrixVision platforms are currently embedded in ABS and RDP deployed at the edge of customer sites, and will develop into cloud-based platforms with higher compatibility in the future to connect more devices and applications of different industry players through wireless or 5G networks. They also support compatibility with third-party plug-ins, attracting more participants in the AI industry value chain.

In addition, in order to deepen the capabilities of the existing customer base, they have also innovated in the cooperation model - establishing joint ventures with leading companies in the industry to expand the cooperation results to more scenarios.

CISAI Tech, a joint venture with CISDI Group, is a successful case. "The strategic partnership not only allows us to gain its industry insights, but also enables us to leverage its industry resources to rapidly penetrate into relevant industry verticals," the prospectus explained.

	2月6日至 12月31日期間	截至12月31日止年度		截至9月30日 止九個月
	2018年	2019年	2020年	2021年
優質客戶數目	—	13	23	不適用 ⁽¹⁾
優質客戶總收入 (人民幣千元)	—	114,163	381,255	不適用 ⁽¹⁾
優質客戶的收入貢獻百分比..	—	49.8%	82.5%	不適用 ⁽¹⁾
優質客戶以金額計算的 重疊率.....	不適用	不適用	112.7%	不適用 ⁽¹⁾
客戶總數.....	50	150	157	130
總收入(人民幣千元)	37,208	229,141	462,324	553,015

Caption: AlInnovation's high-quality customers increased significantly.

This model also promotes AlInnovation to quickly acquire a large number of users in a short period of time, and the total number of company customers has increased from 50 in 2018 to 157 in 2020.

The proportion of manufacturing in total revenue has also continued to increase, from 36.6% at the end of 2018 to 50.8% in the first three quarters of 2021.

As of December 31, 2020, Alnnovation had 23 high-quality customers, accounting for 82.5% of the contribution, and the repurchase rate of high-quality customers in terms of amount was 112.7%.

3. Risk and Potential

Alnnovation can become the first "AI + manufacturing" company "almost" listed on the Hong Kong Stock Exchange, which is a comprehensive affirmation of its company's valuation, profitability, and development prospects.

According to Sullivan data, in terms of revenue in 2020, Alnnovation is the third largest AI technology-driven solution provider in China's enterprise AI solution market, and the largest AI technology-driven solution provider in China's manufacturing AI solution market.

According to IDC data, Alnnovation is the fourth largest machine learning platform manufacturer in China in 2020-2021H1, and ranked fifth in China's computer vision application market share in 2021H1.

It is worth noting the risk of industry competition. On the one hand, the enterprise AI solutions industry is very competitive, and opponents usually include:

1) Competition with other companies that focus on developing and commercializing AI technologies, 2) Competition with existing players that are not AI-focused in the various verticals that have been involved, 3) Competition with new industry entrants; 4)) potential competition from global tech companies.

On the other hand, the market is very fragmented. In terms of revenue in 2020, although Alnnovation has become the third largest technology-driven supplier in the Chinese enterprise AI solution market, its market share is only 0.3% among more than 1,500 market players.

However, the pie in the entire market continues to grow.

According to Frost & Sullivan, the market size of China's enterprise AI market reached approximately RMB 139.4 billion in 2020, and is expected to reach approximately RMB 836.6 billion by 2025, with a CAGR of 43.1%.

In 2020, the Chinese enterprise AI market accounted for approximately 75.0% of the entire AI market, and is expected to increase to approximately 80.0% by 2025.

Another data shows that with the more comprehensive adoption of digital and intelligent technologies, the artificial intelligence solutions market in China's manufacturing industry is expected to reach approximately RMB 64.9 billion by 2025, with a compound annual growth rate of 48.3% from 2020 to 2025.

"The industrial potential of AI's mainstream deep learning technology can be 'consumed' for at least 20 years, and it will penetrate into various fields." Kai-Fu Lee once optimistically predicted that AI will be completely popularized and enter every company.

In the process of AI in manufacturing, finance and other industries, whoever can be the first to go public and get continuous support in the capital market can then seize more AI market dividends.