

Cutting-edge Technology Fan

Comparative Supplier Evaluation: An In-depth Report



Sep. 2023

CTF Introduction

The CTF model of ICV TAnK helps the public understand the development of cutting-edge technology fields and corresponding companies. Cutting-edge technology has many characteristics such as un-converged technology routes, high uncertainty in technology development, and early stage of commercialization promotion. With the continuous development of technology, a reasonable model is needed to evaluate the company, and form a consensus on the comprehensive evaluation of cutting-edge technology suppliers in specific periods.

The CTF model consists of four differently-sized fan-shaped regions and three-dimensional coordinates. The horizontal coordinate is the Maturity of Technology (i.e. the technology, R&D, team), the lateral coordinate is the Commercialization of Technology (i.e. the revenue, customer, application case), and the vertical coordinate is the Enterprise Heritage (i.e. the elements that the supplier has accumulated over the long-term operation that can help the development of the enterprise). The CTF model divides suppliers into the following four fans according to their comprehensive performance in three dimensions: Pilot, Overtaker, Explorer, and Chance-seeker.

As emerging technologies are in a period of rapid growth and have high uncertainty, the CTF diagrams for each sub-field need to be updated on a regular basis.

The purpose of the supplier evaluation is to provide information on the current state of the company to the purchasing party and wide-ranging industry participants (such as investment organizations) to aid decision making. The Cutting-edge Tech Fan (CTF) model of future technology evaluation is used to assess suppliers from multiple dimensions including technology (including technology readiness and R&D technology reserves), market (market development and market share), and comprehensive accumulation of the enterprise.

Scoring guidelines for the CTF model

Maturity of
Technology

Commercialization
of Technology

Hidden Attribute

Maturity of Technology

Technology: the leading position of a vendor's technologies and/or terminal products. The evaluation indicators, which can be provided by both direct selling and distribution selling, including product's technical indicators, performance, quality, reliability, etc.

Team: with the technical background, influence, creativity, and output efficiency of the vendor's core technical team members, they can effectively carry out the transformation of technological achievements and accelerate the iteration of technology, keeping the technology at a high level of competitiveness.

Research & Development Input: the vendor obtained the fundings from the external support and the accumulations that were generated by itself, which allow the vendor investing on developing the new technologies, so as to build up the technical barriers.

Innovation: coordinating various resources, technologies, and capital owned by vendor ensures that, the vendor owns better capabilities to carry out investments, resource synergies, and strategic defense or attack.

Technology Strategy: the vendor has deep understandings of the technology and product in the relevant technical field and owns clear strategy plan. Based on the strategy plan, the vendor specifies the roadmap of technology and is able to fulfill its commitments.

Commercialization of Technology

Market Understanding: the supplier has a good understanding of the customer's requirements through customer feedbacks and market trends, then the supplier transforms these into products and services. Specifically, the supplier is able to develop and deliver the appropriate products in accordance with the customer's phased demands, with continuous improvements in cost, performance, and service.

Marketing Strategy: the supplier has a clear marketing strategy, which is consistently communicated within the organization and through the external marketing channels. The core goal of the supplier's marketing execution is to influence customers' cognition and recognition of its brand, business, and products. Such core goals can be achieved through targeted plans and strategies, which are driven by a combination of advertising, campaign and thought leadership.

Business Model: the supplier offers products or services that meet the needs of the customer and create value for them. This operation system is logical and feasible, so as to ensure the sustainable development of the business.

Vertical/Industry Matching: the supplier assembles the necessary resources, technologies, and products to meet the particular needs of each market segment (including vertical markets); develops products and services in a targeted manner and make value propositions.

Customer Evaluation: the supplier proactively invites customers to evaluate their experience with new products and uses this feedback to establish, develop and administer customer relationships, as well as improve its products and services. Specifically, this includes the achievement of the performance targets of the new technology products, the technical support program (and its quality), the satisfaction of the demand fulfillment, and the timeliness of service.

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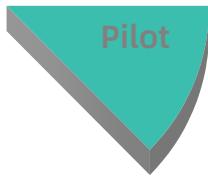
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Hidden Attribute

Technology Influence: the technology providers are able to deliver values that reflect their commitment to privacy protection, empathy, equality and inclusiveness. Their values can lead to the sharing of diversified technologies, resulting in technology equalities.

Overall Viability: the technology providers have been able to maintain healthy financial positions by relying on their commercial success and operating activities over the past years. They show their abilities that allow them to survive when facing the uncertainties of the relevant market and technological environment, which does not include the survival model that is mainly relying on the external financing.

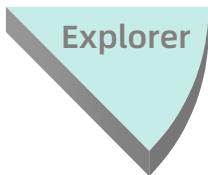
Market Reputation: a company's reputation is a collection of characteristics that reflect its past behavior. It can be expressed by the emotional response of customers, investors, employees and the general public towards the corporation, it also includes the subjective perception of a organization's features.



Companies in this sector are characterized by their large scale, and they have accumulated a lot of experience in the development of previous technology tracks, which has laid a solid foundation for them to enter new frontier technology fields. They have the ability and resources to lead a new wave of cutting-edge technologies and have the potential to have a profound impact on the future direction of the industry.



Companies in this sector have begun to take shape after a period of development, they get advantages out of their powerful research and development strengths. Because of their bunch of buildup about particular technologies, it's reasonable to expect that these companies could 'be promoted' to the Pilot sector in the future.



Companies in this sector have relatively small scale, however, it embarked on the emerging technology development track earlier. The development of the particular technology is still at early stage. Compared to Pilot and Overtaker, they usually fall short in terms of overall technical strength.



Companies in this sector has a keen business sense. It is a newly established company in the industry, so its size is small, but its founding team members have certain resources for the company to develop in the new track. There is currently no engineering prototype of the product, and no or little marketing.

List of Exhibits

Exhibit : Superconducting Quantum Computing

Exhibit : Trapped Ion Quantum Computing

Exhibit : Photonic Quantum Computing

Exhibit : Neutral Atom Quantum Computing

Exhibit : Dilution Refrigerator for Quantum Computing

Exhibit : Quantum Key Distribution

Exhibit : Quantum Random Number Generator

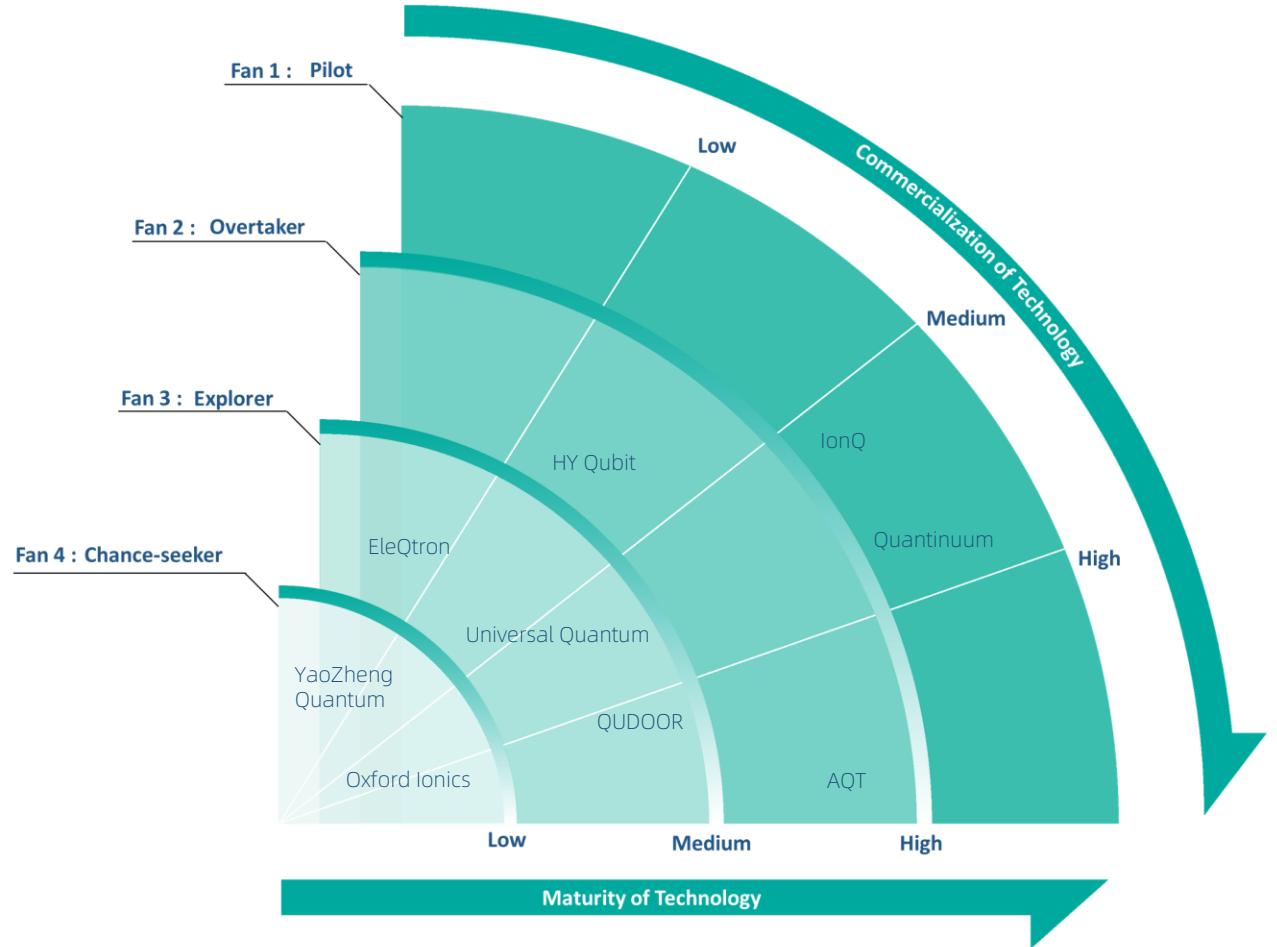
Exhibit : Quantum Clock

Exhibit : Quantum Magnetic Measurement

Exhibit : Quantum Gravity Measurement

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CTF – Trapped Ion Quantum Computing



Typical Enterprise Analysis-Pilot of Trapped Ion QC



Quantinuum launched a new processor named H2 in May 2023, featuring 32 fully-connected, high-fidelity qubits and an innovative architecture for improved connectivity. Quantinuum showcases impressive achievements, such as demonstrating a 32-qubit state,



IONQ is known for developing large-scale and high-performance quantum processors. They launched the IonQ Forte (32-qubit) in 2022, the powerful quantum computer available via the cloud. IONQ plans to develop more powerful processors with hundreds

Typical Enterprise Analysis-Overtaker of Trapped Ion QC



HY Qubit led by Professor Duan Luming, a pioneer in trapped ion quantum computing. HY's first-generation room-temperature trapped ion quantum computer HYQ-A37 can provide up to 37 qubits of quantum computing power, achieving programmable



AQT is a rapidly growing company in trapped ion quantum computing. In 2021, they launched PINE, the world's first quantum computer that fits into a standard 19-inch rack. They plan to develop more powerful processors with hundreds or

Typical Enterprise Analysis-Explorer of Trapped Ion QC



In 2022, QUDOOR launched QuECO, the first developer relations program in China, to cultivate a quantum computing developer community. In 2022, they also achieved a breakthrough by developing the QuSoil quantum measurement and control system, providing an



Universal Quantum's technology is based on six pillars and has received funding from the German and UK governments. In November 2022, Universal Quantum secured a contract worth €67 million to build a fully

Typical Enterprise Analysis-Chance Seeker of Superconducting QC



Oxford Ionics is developing high-performance quantum computers using trapped-ion technology and noiseless electronic qubit control. In 2023, Oxford Ionics raised £30 million in Series A funding from leading quantum and tech



YaoZheng Quantum aim to design and customize trapped ion systems and popularize quantum computing hardware, solve general quantum algorithms, promote quantum cloud computing, and strive to become an excellent quantum

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CTF Series Report



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At ICV, we are passionately curious about new technologies and strive to deliver the most robust market data and insights to help our customers make informed strategic decisions.

We bring together deep intelligence across a wide range of capital-intensive industries and markets. By connecting data across variables, our analysts and industry specialists present our customers with a comprehensive view of their world.

This is the benefit of the new intelligence. We are able to isolate cause and effect, risk and opportunity in new ways that empower our customers to make well-informed decisions with greater confidence.

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