Automotive T-Box Ranking and Comparison Analysis Report, 2021

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T-BOX Parameters

Automotive T-Box Ranking and Comparison Analysis Report, 2021 conducts comparison of T-BOX parameters of **15** vendors, and the comparative items include:
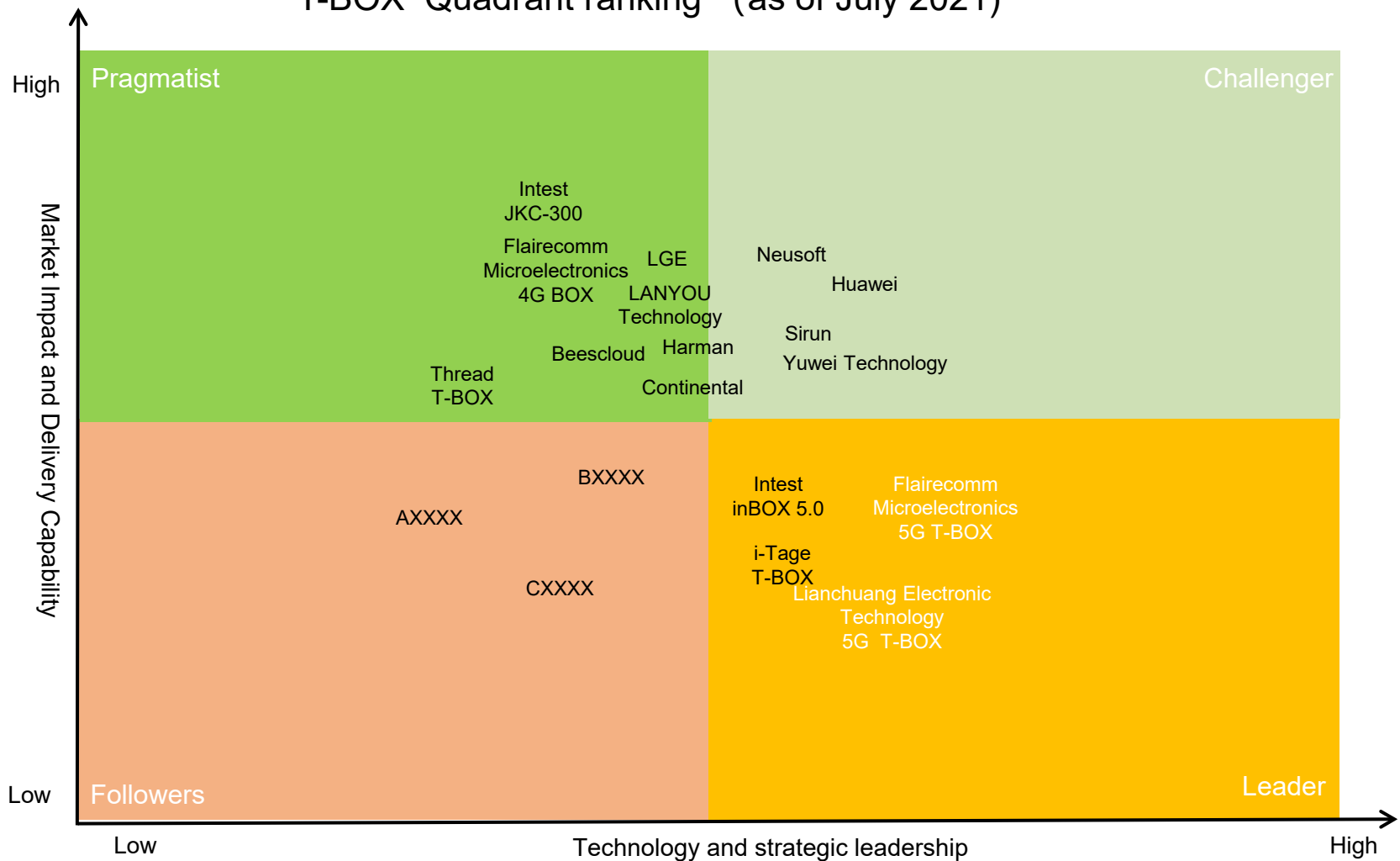
size,	vehicle connectivity,
power consumption,	whether OTA is supported,
5G support,	remote control,
4G support,	API interface support,
V2X support,	storage capacity,
positioning support,	authentication status,
sensor support,	mass production capacity,
integrated antennas,	number of designated customers,
integrated central gateways,	mass production shipments,
network security and encryption	etc.

T-BOX 象限排名（截至2021年7月）

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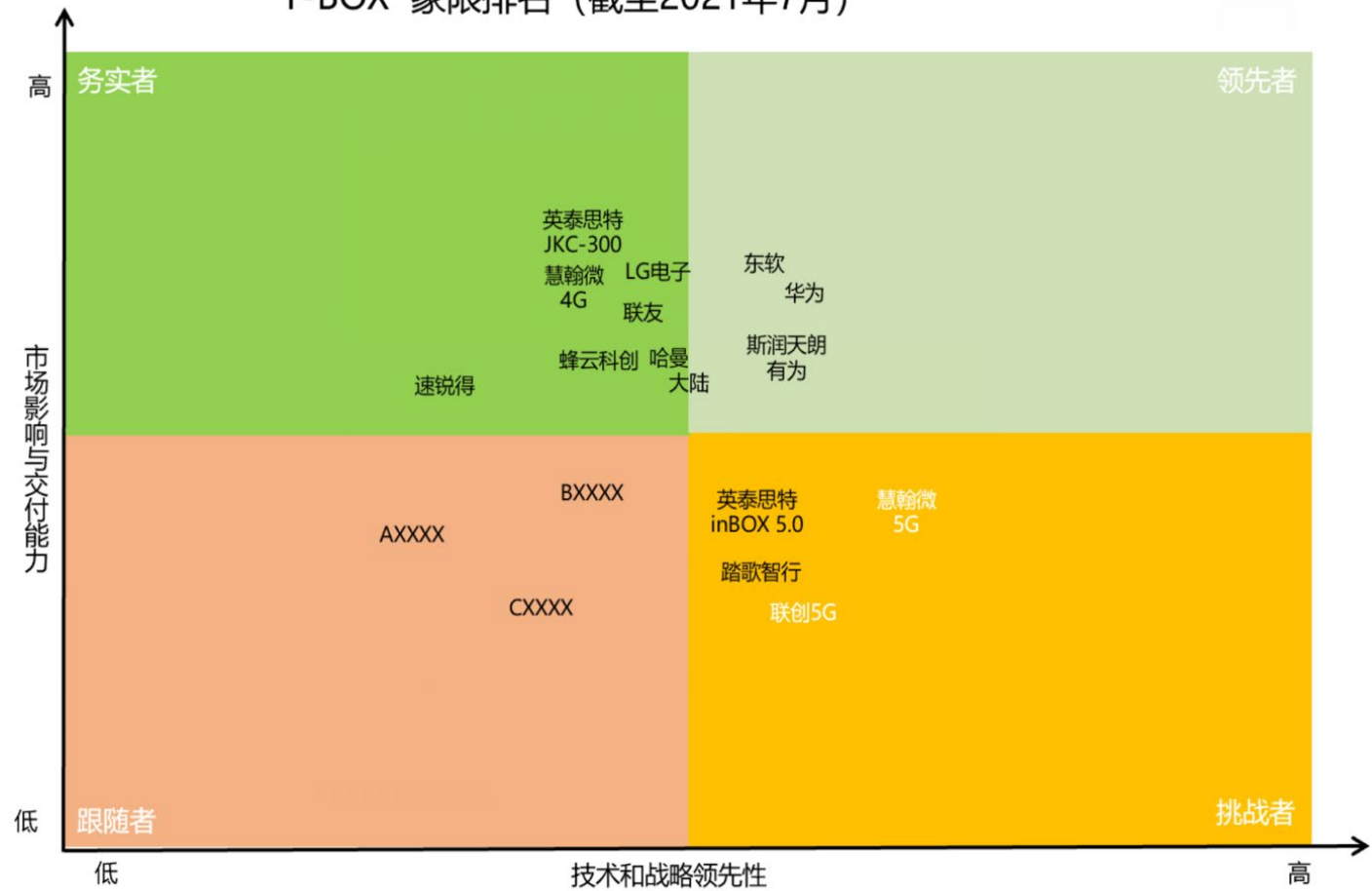
T-BOX Quadrant ranking （as of July 2021）

Note:

The product shown in white font is that not mass produced

The products entering this Quadrant all have strong strength.

Domestic enterprises provide more detailed data, while foreign players do not provide data, so foreign players enter the quadrant less.

The follower quadrant has no real name.

At the same time, ResearchInChina conducted interviews with experts who participated in the ranking research.
Experts introduced some development trends of T-BOX, and this article extracts some of them.

T-BOX Software Development Trend

Q: What functions do you think will be expanded in T-BOX software, and what are the future trends?

A: T-BOX software must have TSN protocol functions in the future. TSN refers to a set of "sub-standards" formulated based on specific application requirements under the framework of IEEE802.1 standards. It aims to establish a "universal" time-sensitive mechanism for Ethernet protocols to ensure the time certainty of network data transmission. At the same time, data shaping is used to ensure that the delay reaches the microsecond level (generally no more than 250 microseconds per bridge), and to ensure that reliable communication can be enforced regardless of link failures, cable breaks and other errors. This option ensures that copies of critical traffic can be transmitted in a disjoint path in the network, leaving only any packets that reach the destination first, thus achieving seamless redundancy and achieving ultra-high reliability, which is especially important for unmanned driving.

The T-BOX function is currently based on data collection and forwarding, and will evolve into many functions such as data collection, editing, analysis, control, OTA, integration of multiple ECU information and analysis, etc.

T-BOX Hardware Integration Trend

Q: What do you think is the development direction of T-BOX product hardware integration?

A: In order to increase bandwidth and achieve low latency, T-BOX will add Ethernet interface in the future and gradually become standard, now generally 100M, a few 1G. T-BOX will be integrated with the gateway to assume the switch function. T-BOX can also consider integration with the domain controller.

3-4-way CAN will become the mainstream, and most of them are 1-2-way CAN at present.

The T-BOX products currently produced by Hopechart can also realize the function of online exhaust gas monitoring.

Bottleneck to be broken by T-BOX Vendors

Q: T-BOX is a necessary communication component of vehicles and carries a large number of computing tasks. What technical bottlenecks do you think T-BOX vendors may encounter in the future?

A: As T-Box will undertake more functions in the future, it needs to embed more applications. This not only needs to increase memory and processing power, but also increases the complexity of software system development (for example, SOA should be isolated between different applications), Software capabilities is a severe challenge to traditional T-BOX suppliers.

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