



GLOBAL CBDCS & STABLECOINS MARKET 2024-2031

Competitor Leaderboard

Prepared for Giesecke+Devrient

First Published July 2020

© Juniper Research Limited
All rights reserved.

Published by:

Juniper Research Limited,
9 Cedarwood
Chineham Park
Basingstoke
Hampshire
RG24 8WD
UK

UK: Tel +44 (0) 1256 830001/475656

US: Tel +1 408 716 5483

UK: Fax +44 (0) 1256 830093

www.juniperresearch.com

info@juniperresearch.com

Report Author

Sam Barker

Juniper Research endeavours to provide accurate information. Whilst information, advice or comment is believed to be correct at the time of publication, Juniper Research cannot accept any responsibility for its completeness or accuracy. Accordingly, Juniper Research, author or distributor shall not be liable to any person or entity with respect to any loss or damage caused or alleged to be caused directly or indirectly by what is contained in or left out of this publication.

This report contains projections and other forward-looking statements that have been developed through assumptions based on currently available information. All such statements and assumptions are subject to certain risks and uncertainties that could cause actual market parameters and performance to differ materially from those described in the forward-looking statements in the published reports. Such factors include, without limitation, unanticipated technological, environmental, political, social and economic factors beyond the control of Juniper Research.

Forecasting is by definition a dynamic process that depends on the factors outlined above and can be vulnerable to major changes as a result. Juniper Research operates a policy of continuous improvement and reserves the right to revise forecasts at any time without notice.

All rights reserved: Juniper Research welcomes the use of its data for internal information and communication purposes, subject to the purchased license terms. When used it must include the following "Source: Juniper Research". Prior written approval is required for large portions of Juniper Research documents. Juniper Research does not allow its name or logo to be used in the promotion of products or services. External reproduction of Juniper Research content in any form is forbidden unless express written permission has been given by Juniper Research. Copying and/or modifying the information in whole or in part are expressly prohibited.

If you wish to quote Juniper Research please submit the planned quotation to info@juniperresearch.com for approval.

Foreword

Juniper Research Limited

Juniper Research specialises in providing high-quality data and fully researched analysis to manufacturers, financiers, developers and service/content providers across the communications sector.

Consultancy Services: Juniper Research is fully independent and able to provide unbiased and reliable assessments of markets, technologies and industry players. Our team is drawn from experienced senior managers with proven track records in each of their specialist fields.

Internal Use Licence

Juniper Research hereby grants the purchaser of this report (Licenced Works) a non-exclusive, perpetual, fully paid, royalty free, worldwide right and licence to use the Work for the purposes of internal review, company comparison and strategic planning. Internal use means that the purchaser must only use this Work within the confines of their immediate organisation. It must not be published, in whole or part, to the public domain. It must not be used in marketing materials, on websites, posted on social media or shared via any public-facing media. A further licence can be purchased to enable this additional right. The report cannot be sub-licensed.



Contents

- 1.1 Why Read This Report2
 - Figure 1: Juniper Research Competitor Leaderboard – CBDCs*3
- 1.2 Giesecke+Devrient4
 - Table 2: Juniper Research Competitor Leaderboard Heatmap: G+D*4
 - i. Corporate4
 - ii. Geographic Spread5
 - iii. Key Clients & Strategic Partnerships5
 - iv. High-level View of Offerings6
- 1.3 Juniper Research Competitor Leaderboard Assessment Methodology7
- 1.4 Limitations & Interpretations7
 - Table 3: Juniper Research Competitor Leaderboard Scoring Criteria*8





1.1 Why Read This Report

This section details several vendors active in the Central Bank Digital Currency (CBDC) market. It is not intended to provide comprehensive coverage of all the vendors operating in this market, but introduces the reader to 14 CBDC vendors that Juniper Research considers to be market leaders.

Juniper Research is a Europe-based provider of business intelligence. We specialise in high-quality data and fully researched analysis to manufacturers, financiers, developers, and service/content providers across the financial services industry. Juniper Research is fully independent and provides unbiased and reliable assessments of markets, technologies, and industry players. Our team is drawn from experienced managers with proven track records in each of their specialist fields.

Key CBDC and Stablecoin Market Takeaways

CBDC Vendors Must Emphasise Security Features

One of the key concerns for both end users and central banks is security. Maintaining trust in the central bank is crucial to the ongoing health of the financial sector and, as such, avoiding crises surrounding a cyberattack on payments infrastructure is vital. While quantum computers are largely experimental, the potential threat they pose to CBDCs needs to be addressed. Future-proofing CBDCs involves making them resistant to quantum threats. The World Economic Forum (WEF) recommends that, to mitigate these threats, CBDCs should be built with cryptographic agility at their core.

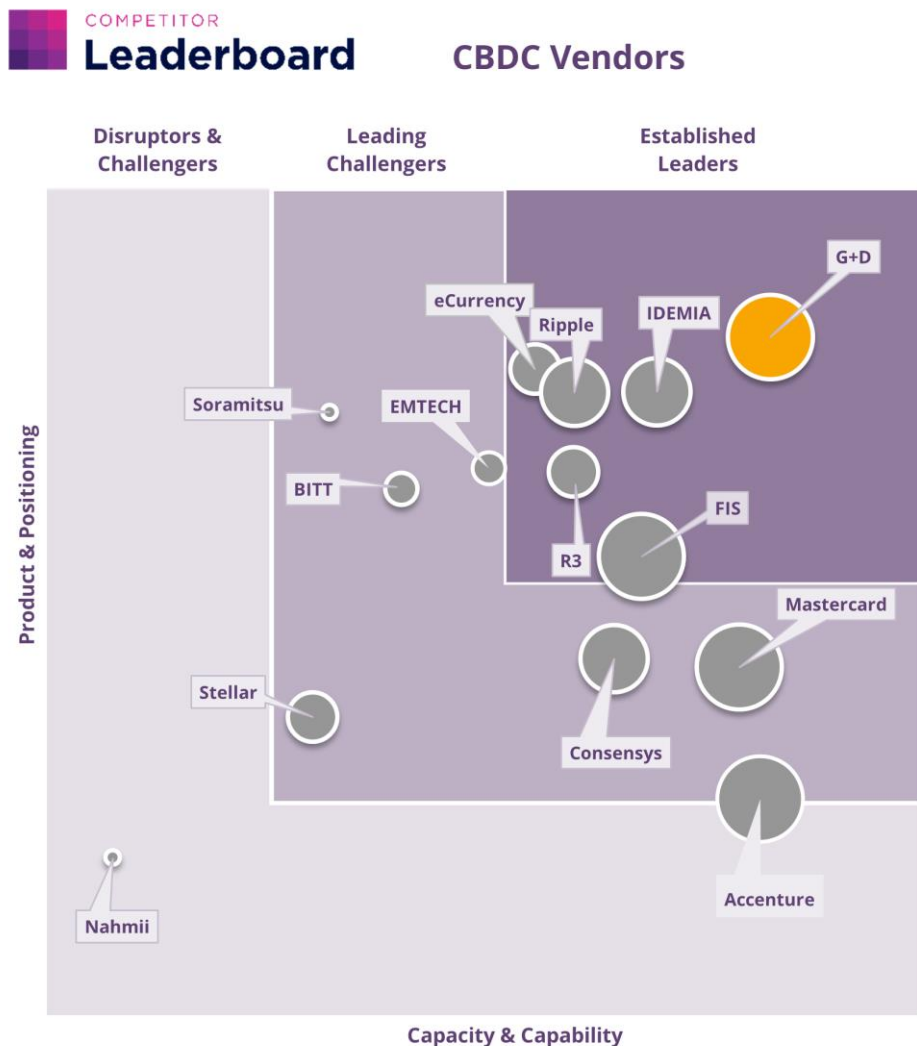
Avoiding attacks on CBDCs also involves protecting identity verification systems. Complying with data protection regulations is a part of this, as is accounting for human error and scams. Helping banks to provide citizens with educational initiatives about how to secure a CBDCs account from malicious actors can help reduce instances of fraud.

CBDC Vendors Must Provide Holistic Solutions

To fully assist a central bank's journey from research to roll-out, it is vital to provide a full suite of solutions or have robust partnerships with complementary vendors. Beyond the technology layer, vendors should also provide consultancy services to assist with the development of legislation, promoting adoption of CBDCs, and conduct workshops for intermediaries to begin CBDC distribution. Vendors should also participate in technical forums and cross-border projects so they can provide central banks with an innovative strategy on digital currency use cases.



Figure 1: Juniper Research Competitor Leaderboard – CBDCs



Source: Juniper Research

Giesecke+Devrient

G+D is an established leader in the CBDC sector, ranking first among the vendors in the market. Its end-to-end approach provides central banks with comprehensive consultancy, from legislation assistance through to providing banks with the technology needed to mint and issue digital currencies. G+D's deep exploration of various innovative use cases for CBDC payments, including a "green" wallet to incentivize the purchase of sustainable goods and services and a child-parent wallet, gives it a powerful advantage in the market.

G+D's focus on financial inclusion makes it a strong competitor in the CBDC space. As its Filia technology can be used throughout a variety of different devices and does not require a bank account, it allows banks to extend access to digital payment to underbanked populations. This is especially appealing to central banks in emerging markets, which are currently prioritising financial inclusion.

The recent marketing activities promoting G+D's wholesale CBDC expertise are expected to increase awareness of their offerings in this domain. This is in line with Juniper Research's finding that advanced economies are increasingly exploring wholesale solutions; opening up G+D's market to a wider range of economies.



1.2 Giesecke+Devrient



Table 2: Juniper Research Competitor Leaderboard Heatmap: G+D

	Corporate: Capacity & Capability					Product & Positioning					Market Presence
	Financial Performance & Size in Sector	Corporate Branding & Marketing Strength	Experience in Sector	Operations	Distribution & Partnerships	Breadth of Offering	Depth of Services	Customers & Deployments	Creativity & Innovation	Future Prospects	
G+D	High	Medium	High	Medium	High	High	Medium	Medium	High	High	High

■
■
■
■
■ High

Source: Juniper Research

i. Corporate

Giesecke+Devrient (G+D) is a global SecurityTech company headquartered in Munich, Germany. Founded in 1852, the company has a workforce of more than 14,000 employees and generated sales of EUR 3 billion in the 2023 fiscal year.

The company offers built-in security technology in three segments: Digital Security, Financial Platforms and Currency Technology.

- Digital Security:** G+D protects and manages confidential systems, networks, data and identities, in physical, digital and mobile settings. Through Veridos, a joint venture with the state-owned Bundesdruckerei, G+D offers highly secure physical and digital identity documents as well as border control and identification systems.

- A subsidiary of G+D, secunet, offers encryption technology up to the highest security level for public authorities and industrial enterprises.
- Financial Platforms:** In the digital age, G+D orchestrates payment and banking solutions based on human-centric security technology. This includes end-to-end solutions for card and digital payments, eCommerce checkout solutions, and solutions for access and identity management.
- Currency Technology:** G+D provides trusted and secure public currency solutions for both physical and digital ecosystems. The offering encompasses the whole cash cycle, including the production and distribution of banknotes including its substrate and security features, banknote processing machines, and holistic cash centre solutions. Complementary to this portfolio for physical currencies, G+D also provides solutions for building and running digital currency ecosystems.



G+D started exploring and researching the concept of Central Bank Digital Currency (CBDC) in 2017. Since then, G+D has provided advice to central banks worldwide, participated in studies, and successfully concluded CBDC technology projects in collaboration with numerous central banks.

The company's current management team consists of Dr. Ralf Wintergerst as Group CEO, Jan Thyen as Group CFO, Gabriel von Mitschke-Collande as Group CDO, Dr. Wolfram Seidemann as CEO of G+D Currency Technology, Dr. Philipp Schulte as CEO of G+D Mobile Security, Gabrielle Bugat as CEO of G+D ePayments, Marc-Julian Siewert as CEO of Veridos, and Axel Deininger as CEO of secunet.

ii. Geographic Spread

Headquartered in Munich, G+D is represented by 123 subsidiaries, joint ventures in 40 countries, and a workforce of more than 14,000 employees.

iii. Key Clients & Strategic Partnerships

G+D offers solutions for the tokenised economy to central banks, as well as to financial and payment service providers globally. G+D has gained recognition for its expertise, demonstrated through reference projects such as the following:

- G+D collaborated with the Bank of Thailand to run an extensive retail CBDC pilot project involving around 10,000 users, 400 merchants, and the integration of three major financial service providers. Use cases ranged from online to offline payments; directly integrating with the existing ecosystem providers like commercial banks.
- G+D provided the technology to Bank of Ghana for the e-Cedi pilot project. The pilot was run in different parts of the country; testing online and offline payment use cases. The project included stakeholders such as commercial banks, payment service providers such as fintechs, and mobile money providers, merchants, and consumers.
- For the Central Bank of Eswatini, G+D provided strategic consultancy and technical assistance in guiding the research and development of a potential digital lilangeni. This included the creation of a design concept of a potential digital currency in Eswatini as well as a proof-of-concept and pilot project. Use cases include online

and offline payments with the retail CBDC; integrating with merchants and commercial banks.

- In 2023, Hong Kong Monetary Authority's e-HKD Pilot Programme Phase One collaborated with industry partners to explore domestic retail use cases for a hypothetical e-HKD; focusing on offline and online payments. G+D and the Standard Chartered Bank of Hong Kong demonstrated CBDC payment capabilities through training, sandbox environments, and real-world tests at local merchant shops, as well as at the Hong Kong FinTech Festival 2023.
- G+D participated in Banco Central do Brasil's LIFT challenge, which selected G+D's proposal for Filia's capability of dual offline payments.
- In 2022, G+D joined the G20 TechSprint, hosted by BIS and Bank Indonesia, which solicited innovative global technological solutions to catalyse developments in wholesale and retail CBDCs. G+D's Filia solution was selected as a finalist for its use in enabling financial inclusion.
- In 2023, G+D joined the G20 TechSprint, hosted by BIS and Reserve Bank of India, to explore solutions supporting innovation in multilateral cross-border CBDC transactions. G+D with its partner UDPN were selected as finalists; demonstrating their solution by integrating non-DLT and DLT-based CBDC platforms to support cross-currency transfers between end user wallets, including foreign exchange conversion, liquidity management, and other services.
- Winner of the Hong Kong Monetary Authority Best Technology award for its retail CBDC solution 'Filia'.
- Winner of the Global CBDC Challenge by Monetary Authority of Singapore with its retail CBDC solution 'Filia'.
- Offline payment project and partnership with Banco do Brasil, the second largest banking institution in Brazil.
- Proof-of-concept project on Commercial Bank Money Tokens focused on machine-to-machine offline token-based transactions together with German Commercial Bank DZ Bank AG, DG Nexolution and Festo.



iv. High-level View of Offerings

“Tokenisation is driving new services and business models across industries. With retail and wholesale CBDCs, deposit tokens, and regulated stablecoins, token-based digital money can transform the financial system by enhancing efficiency, accessibility, and transparency.”

Source: Daniel Nagy, Senior Business Analyst CBDC at G+D, Interviewed October 2024.

G+D's vision is a secure, interoperable ecosystem that supports online and offline payments; ensuring resilience and reducing cost and complexity. Here are the key technologies and solutions G+D offers to transform the financial system through tokenisation and innovative technologies:

a) Retail CBDC

G+D's Filia® retail CBDC technology provides a production-grade, secure, efficient, and flexible multi-tier, token-based system for issuing, managing and distributing central bank digital currencies. It ensures interoperability with existing payment systems, as well as DLT solutions, and is designed to work across multiple platforms and devices. G+D Filia provides the highest level of security and resilience with no single point of failure; truly making it possible to balance privacy and transparency. It also enables secure, consecutive offline payments, as well as programmable use cases, to cultivate innovative new services. The technology provides production-level performance, catering for nationwide roll-outs.

b) Wholesale CBDC

G+D provides comprehensive consultancy and technical solutions to central banks, commercial banks, and corporates, for the implementation of Wholesale Central Bank Digital Currency (wCBDC). Their expertise enables the tokenisation

of central bank reserves; unlocking efficiency in interbank settlements, including tokenised securities, deposits, and real-world assets.

Their solutions support interbank payments, cross-border transactions, and atomic settlement models like Delivery versus Payment (DvP) and Payment versus Payment (PvP); ensuring secure and efficient settlements in the evolving digital landscape.

c) Tokenised Deposits and Stablecoin Services

The G+D Token Management System is the ultimate solution for seamless issuance, management, and operation of tokenised deposit and stablecoin services. Tailored for the needs of commercial banks and regulated stablecoin issuers and operators, it is highly flexible and comes with an intuitive user interface that makes it easy to navigate. It optimises the entire lifecycle of tokenised deposits and stablecoin services, ensuring a seamless experience for users.

The G+D Token Management System simplifies the complexities of managing regulated stablecoins and tokenised deposits. While supporting regulatory frameworks such as the EU's MiCAR, it efficiently facilitates primary issuances, Know Your Customer (KYC), transaction monitoring, reporting, and auditing, to ensure compliance and operational excellence.

d) Dual and Consecutive Offline Payments

G+D Filia® Unplugged is a cutting-edge solution designed to provide a secure and innovative solution that enables seamless offline digital payments. This service is designed to integrate with existing payment systems such as retail CBDC, commercial banks' tokenised deposit systems, Instant Payment Systems (IPS), or Mobile Network Operator (MNO). With Filia® Unplugged, users can conduct reliable payments utilising multiple wallet form factors, (smartphones, smartcards, wearables), even without Internet connectivity; ensuring accessibility for everyone, including those in remote areas or regions with unstable network infrastructure.



1.3 Juniper Research Competitor Leaderboard Assessment Methodology

Juniper Research provides updates on a selected number of CBDC providers. To qualify for the Leaderboard companies must be involved in the direct provision of CBDC platforms. The companies included here have developed specific expertise in the CBDC space, though some embarked on the route earlier than others and therefore have wider customer bases or geographical reach. This research covers a significant number of vendors; however, we cannot guarantee that all players in the market are included. Our approach is to use a standard template to summarise the capability of players offering CBDC services. This template concludes with our view of the key strengths and strategic development opportunities for each vendor. We also provide our view of vendor positioning using our Juniper Research Leaderboard technique.

This technique, which applies quantitative scoring to qualitative information, enables us to assess each player's capability and capacity, as well as its product and position in the broader market for CBDC services. The resulting Leaderboard exhibits our view of relative vendor positioning.

1.4 Limitations & Interpretations

Our assessment is based on a combination of quantitative measures, where they are available (such as revenue and number of offices) that indicate relative strength, and also of qualitative judgement, based on available market and vendor information as published. In addition, we have added our in-house knowledge from meetings and interviews with a range of industry players. We have also used publicly available information to arrive at a broad, indicative positioning of vendors in this market, on a 'best efforts' basis.

However, we would also caution that our analysis is almost by nature based on incomplete information and therefore with some elements of this analysis we have had to be more judgemental than others. For example, with some vendors, less detailed financial information is typically available if they are not publicly listed companies. This is particularly the case when assessing early-stage companies,

where a degree of secrecy may be advantageous to avoid other companies replicating elements of the business model or strategy.

We also remind readers that the list of vendors considered is not exhaustive across the entire market but rather selective. Juniper Research endeavours to provide accurate information. While information or comment is believed to be correct at the time of publication, Juniper Research cannot accept any responsibility for its completeness or accuracy, the analysis is presented on a 'reasonable efforts' basis.

The Leaderboard compares the positioning of platform providers based on Juniper Research's scoring of each company against the above criteria that Juniper Research has defined. The Leaderboard is designed to compare how the vendors position themselves in the market based on these criteria. Relative placement in one particular unit of the Leaderboard does not imply that any one vendor is necessarily better placed than others. For example, one vendor's objectives will be different from the next and the vendor may be very successfully fulfilling them without being placed in the top right box of the Leaderboard, which is the traditional location for the leading players.

Therefore, for avoidance of doubt in interpreting the Leaderboard, we are not suggesting that any single cell in the Leaderboard implies in any way that a group of vendors is more advantageously positioned than another group, just differently positioned. We additionally would draw the reader's attention to the fact that vendors are listed alphabetically in a unit of the Leaderboard and not ranked in any way in the cell of the Leaderboard.

The Leaderboard is also valid at a specific point in time, November 2024. It does not indicate how we expect positioning to change in future, or indeed in which direction we believe that the vendors are moving. We caution against companies taking any decisions based on this analysis; it is merely intended as an analytical summary by Juniper Research as an independent third-party.

Finally, we would point out that the Leaderboard is based on a global view consolidated across the digital identity verification space; any Leaderboard produced for one specific region or segment would, by definition, show different vendor positioning. Indeed, not every vendor would appear on such a Leaderboard.



Table 3: Juniper Research Competitor Leaderboard Scoring Criteria

Category	Factor	Description
Capability & Capacity	Financial Performance & Size in Sector	This is a comparison of the relative strength of each company's financial performance in the CBDC market.
	Corporate Branding & Marketing Strength	This is a measure of the vendor's corporate branding and marketing strength, which has been gauged by using website traffic aggregation data and a review of the company's marketing materials.
	Experience in Sector	The date in which the company started operating in the CBDC market. Additionally, Juniper Research will consider the extent of activities during this time.
	Operations & Geographic Spread	This evaluates the overall extent of the vendor's geographical activity based on numbers of regions and offices to measure global reach.
	Distribution/Partnerships	Any corporate partnerships that support marketing, and/or delivering CBDC solutions.
Product & Positioning	Breadth of Offerings	This analyses the breadth of the vendor's offerings in the CBDC space, as determined by an extensive analysis of its product range.
	Depth of Services	This factor analyses the comparative depth in services between vendors, examining the extent to which each solution is featured.
	Customers & Deployments	The extent to which the vendor serves a large number of customers with its CBDC solutions, including whether its solutions are being used in a live system, in pilot stages, or in initial system development.
	Creativity & Innovation	This factor assesses the vendor's perceived innovation through its flow of new CBDC products, developments and enhancements.
	Future Business Prospects	This metric is an analyst assessment of the future prospects of the business in the CBDCs market.
Market Presence	Market Presence	A summary of the vendor's size of operations within the CBDC market

Source: Juniper Research



About Giesecke+Devrient



Giesecke+Devrient (G+D) is a global SecurityTech company headquartered in Munich. As a trusted partner to customers with the highest demands, G+D makes the lives of billions of people more secure with its solutions.

As a global SecurityTech leader with more than 14,000 employees worldwide, G+D engineers customised security tech across three market segments: Digital Security, Financial Platforms, and Currency Technology. G+D explores the big topics of our time, offering expert opinion and insights into technological innovation, security, and efficiency.

As a market leader and reliable partner for currency technology, G+D provides highly secure and efficient solutions at all stages of the currency cycle – both in physical and digital ecosystems.

G+D holds the belief that regulated tokenized finance will constitute a vital component of the future financial system. Through various forms of token-based digital money, including retail and wholesale CBDCs, deposit tokens, and regulated stablecoins, the financial system has the ability to undergo a significant transformation, becoming more streamlined, inclusive, and transparent. G+D's advanced technologies for digital currencies provide cutting-edge solutions to unleash the potential of the tokenized economy and to create a financial system that meets the needs of today and tomorrow.

About Juniper Research



Juniper Research was founded in 2001 by the industry consultant Tony Crabtree, in the midst of the telecoms and dot-com crash. The business was fully incorporated in February 2002 and has since grown to become one of the leading analyst firms in the mobile and digital tech sector.

Juniper Research specialises in identifying and appraising new high-growth market sectors within the digital ecosystem. Market sizing and forecasting are the cornerstones of our offering, together with competitive analysis, strategic assessment and business modelling.

We endeavour to provide independent and impartial analysis of both current and emerging opportunities via a team of dedicated specialists - all knowledgeable, experienced and experts in their field.

Our clients range from mobile operators through to content providers, vendors and financial institutions. Juniper Research's client base spans the globe, with the majority of our clients based in North America, Western Europe and the Far East.