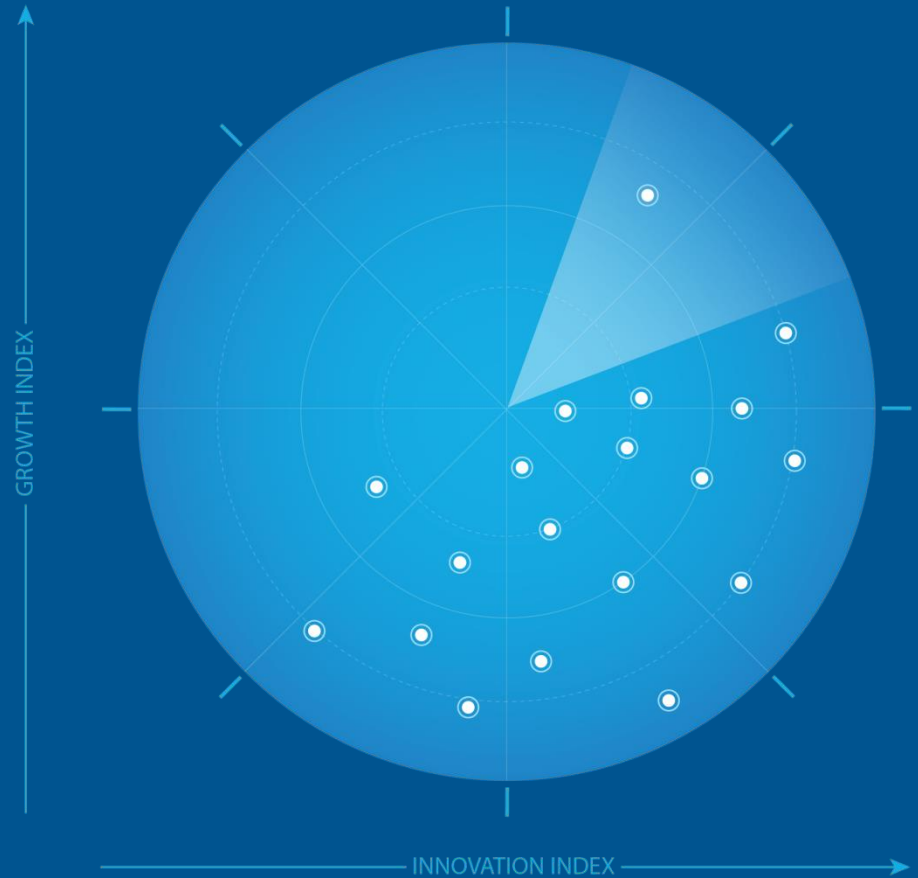


Frost Radar™: Biometric Authentication Solutions, 2022

A Benchmarking System to Spark Companies to Action—Innovation that Fuels New Deal Flow and Growth Pipelines

Global Security Research
Team at Frost & Sullivan



K85E-23

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Strategic Imperative and Growth Environment



Strategic Imperative

- Biometric characteristics are some of the most unique traits that can directly prove that a person truly is who he or she is claiming to be. From a security standpoint, the ability to utilize these individualized characteristics in place of fickle identity credentials such as passwords, one-time passwords (OTPs), or physical keys and tokens will allow users to better secure their personal information and limit the potential for theft or loss.
- The range of biometric options, including single or multiple fingerprint scans, facial scans, iris scans, gait or movement analysis, palm or palm vein scanning, or behavioral patterns, give individuals a choice about the easiest and most convenient method for them to prove their identities to conduct certain transactions or access services.
- The biometrics industry had been shifting even before the COVID-19 pandemic began. Rather than biometric solutions defining themselves simply because they offered fingerprint or facial options, industry success today now focuses on what actions or use cases these solutions can enable for an organization.
- Biometric authentication solutions are complex because they require users to “onboard” themselves and build out a comprehensive profile of their identity. As users go through this enrollment process, the authentication solution must also validate identity through the “proof” provided, be that physical documentation, biometric scans, or both.

Source: Frost & Sullivan

Strategic Imperative (continued)

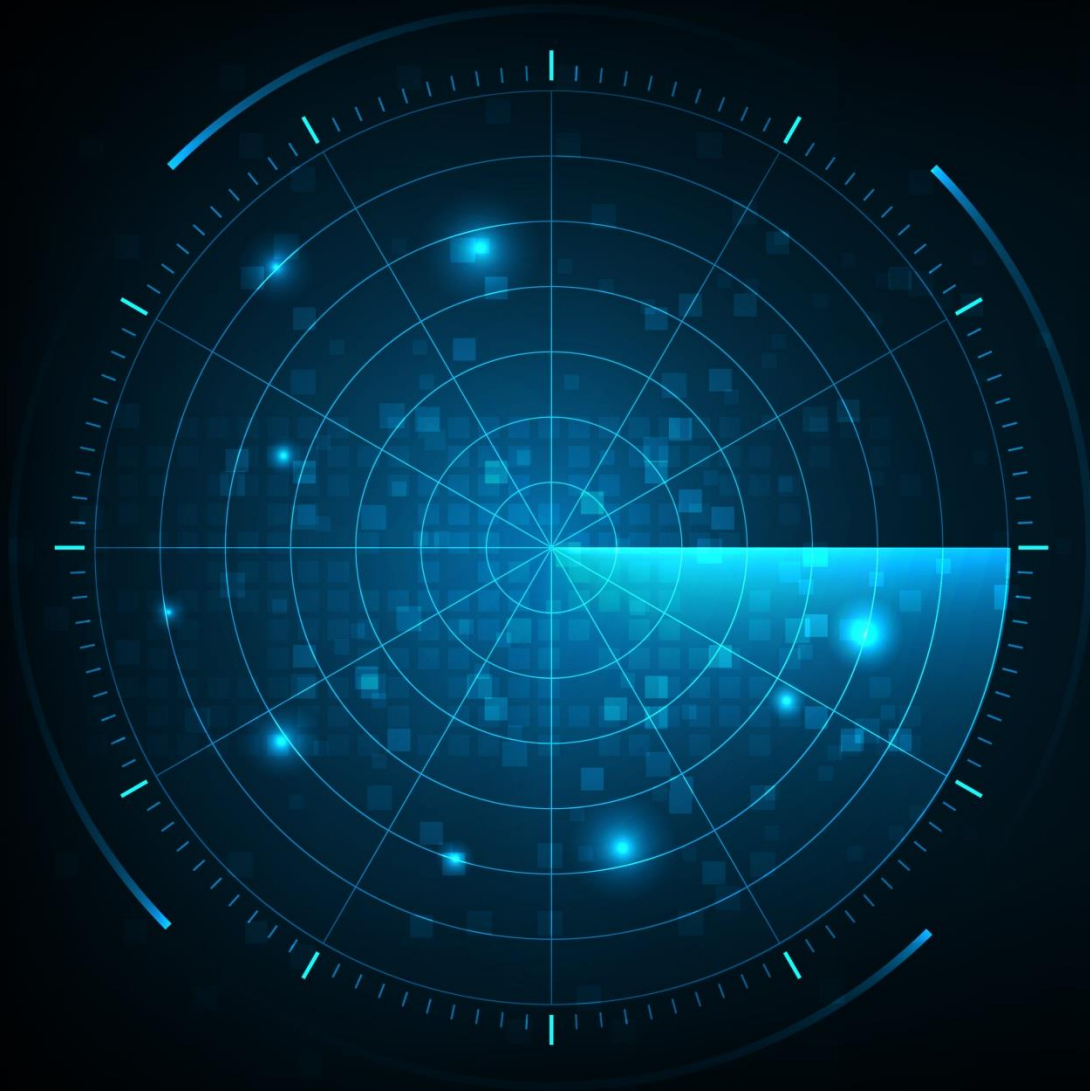
- Authentication solutions also focus on open integration with agreed-upon sources of trust to conduct these validation checks (i.e., comparison of a national identity card to a connected government database to determine whether it is valid or fraudulent). These sources of trust also can eliminate the need for organizations to manage biometric data, negating the requirements for security teams to have more stringent data security policies.
- User privacy and the overall security of biometric template data given to an organization also are important issues that organizations must consider when implementing a new authentication solution. The trend toward self-sovereign identities, where users can control how their personal data is shared and maintain ownership over the biometric template, also encourages more accurate 1:1 identity matching in a more efficient manner.
- Many biometric authentication solutions are introducing automation, artificial intelligence (AI), and machine-learning algorithms to make the authentication process less susceptible to fraud, spoofing, or human error in the identity-proving phase. These functions increase the accuracy of the authentication process and can make for a much faster authentication (in which the user feels as though the action is occurring in real time).

Source: Frost & Sullivan

Growth Environment

- Authentication is one type of solution available in the broader biometric solutions industry. In 2021, global spending on new biometric solutions totaled \$11.82 billion. Frost & Sullivan projects spending to reach \$41.27 billion by 2030, achieving a compound annual growth rate of 14.9%. Almost all biometric authentication vendors offer identity verification functionality, but their ability to authenticate users brings about a different feature than that of verification-only vendors.
- Among the broad set of features available in biometric authentication solutions, key capabilities that set certain solutions apart from the wider industry include:
 - Automated documentation verification reviews, done either via third party or by the vendor;
 - A frictionless onboarding and enrollment process that is convenient to the end user;
 - Open integration with sources of trust to conduct validation processes on identity-proving documentation;
 - AI and machine learning (ML) integration for liveness checks, anti-spoofing measures, or flagging transactions for review;
 - Multimodality options that give users a choice of biometric feature for enrollment and future transactions; and
 - Simple integration processes and biometrics-as-a-service options for customers wanting to implement solutions but needing more cost-effective options to keep programs evergreen.
- Frost & Sullivan studies related to this independent analysis:
 - [Growth Opportunities in the Global Biometric Solutions Industry](#)
 - [Frost Radar: Biometric Solutions in Security, 2020](#)

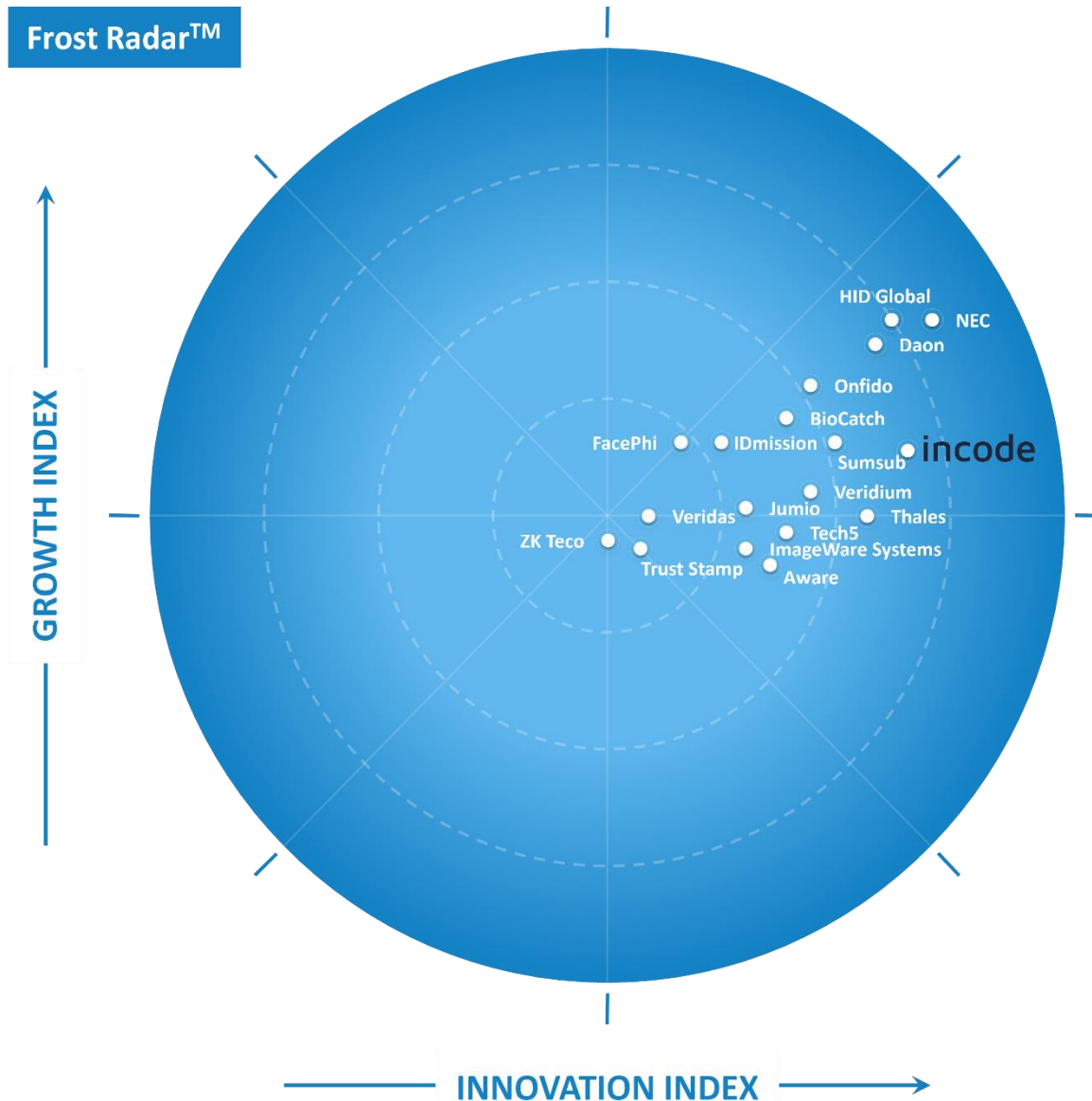
Source: Frost & Sullivan



Frost Radar™

**Biometric
Authentication
Solutions**

Frost Radar™: Biometric Authentication Solutions



Source: Frost & Sullivan

Frost Radar™: Competitive Environment

- In the ever-expanding biometric solutions industry, more than 100 companies offered some type of authentication capabilities in their platform. This Frost Radar™ analysis highlights 19 of the top biometric authentication vendors that serve a global client base, offer multimodal biometric options, and include many of the key functions listed [in the previous section](#).
- For the purposes of this analysis, biometric authentication vendors have been defined as providers of solutions that use biometric data to validate an individual user against a central trusted source database, be it an internal identity database or a third-party database. These solutions allow users to enroll themselves in these systems using biometrics and also conduct the verification procedures for returning users.
- Incode scored among the highest-scoring vendors on the Innovation Index. Their focus on building out highly scalable authentication platforms that conduct multimodal biometric enrollment, authentication, and convenient access to services through mobile devices enabled them to better focus their solutions to meet the specific use cases for multiple customer groups.

Source: Frost & Sullivan

Companies to Action

**Companies to Be Considered First for
Investment, Partnerships, or Benchmarking**

Incode

INNOVATION

- With the second-highest score along the Innovation Axis, Incode's Omni platform stands as one of the industry's most extensive biometric authentication solutions. Omni enables customers to offer both security and convenient user experience via multimodal biometrics, improved accuracy and scalability for new authentication use cases, and seamless user authentication for onboarding and continuous verification.
- The Incode Omni Platform's AI-based architecture eliminates friction points throughout the authentication process, be it from an organizational perspective or from the end-user experience.
- Its LiveBeam passive liveness technology achieves global certification through iBeta as a liveness solution that delivers results 50 times as fast as other solutions and can conduct liveness checks on the edge.

GROWTH

- Incode's revenue gains throughout the pandemic have been staggered, with the company seeing peaks and valleys in its growth trajectory. Despite these fluctuations, Incode is proactively striving to increase its customer outreach, brand recognition, and ultimately revenue growth.
- The versatility of the Incode Omni platform offers a wealth of customer acquisition opportunities, particularly from industries that are not first adopters of biometric authentication solutions. Incode's success with retail, multiple enterprise verticals, hospitality, financial services, government, and gaming highlights the versatility of the solution. The company also is looking to expand its brand presence in the lucrative North American market, buoyed by successes in Europe and Asia-Pacific.

FROST PERSPECTIVE

- The inherent scalability of the Incode Omni platform will be one of its main differentiators when it comes to reaching customers that are traditionally outside of the typical target market for biometric authentication. The emphasis on both security and usability also will be a critical point to emphasize in the North American market, helping Incode to make further inroads without raising concerns over privacy.
- Brand recognition is really Incode's major pain point in the current market landscape. Continued initiatives toward thought leadership participation, trade show appearances, and new customer acquisition will only help the company raise awareness about its solutions and how authentication solutions could work in new use cases.

Source: Frost & Sullivan

Strategic Insights



Strategic Insights

1

The highly individualized nature of biometric credentials only emphasizes the importance of data security through the authentication process. Biometric authentication providers must discuss how the validation process occurs and how the entire validation process and transaction data are safeguarded from potential compromise.

2

New concepts in the digital identity ecosystem, such as decentralization and self-sovereign identity, seek to provide more control and built-in encryption over an individual's personal identifiable information. Biometric authentication vendors that can utilize these principles in their solutions will appeal to customers that are looking to provide this type of data ownership to their users.

3

With this phase of the biometrics industry focusing more on what biometrics can help an organization do, authentication vendors that offer a frictionless, scalable, and customizable solution will see heightened customer interest and be able to grow with their customers as they discover new services or products that they can introduce.

Source: Frost & Sullivan

**Next Steps:
Leveraging the
Frost Radar™ to
Empower Key
Stakeholders**

Significance of Being on the Frost Radar™

Companies plotted on the Frost Radar™ are the leaders in the industry for growth, innovation, or both. They are instrumental in advancing the industry into the future.

GROWTH POTENTIAL

Your organization has significant future growth potential, which makes it a Company to Action.

BEST PRACTICES

Your organization is well positioned to shape Growth Pipeline™ best practices in your industry.

COMPETITIVE INTENSITY

Your organization is one of the key drivers of competitive intensity in the growth environment.

CUSTOMER VALUE

Your organization has demonstrated the ability to significantly enhance its customer value proposition.

PARTNER POTENTIAL

Your organization is top of mind for customers, investors, value chain partners, and future talent as a significant value provider.

Source: Frost & Sullivan

Frost Radar™ Empowers the CEO's Growth Team

STRATEGIC IMPERATIVE

- Growth is increasingly difficult to achieve.
- Competitive intensity is high.
- More collaboration, teamwork, and focus are needed.
- The growth environment is complex.

LEVERAGING THE FROST RADAR™

- The Growth Team has the tools needed to foster a collaborative environment among the entire management team to drive best practices.
- The Growth Team has a measurement platform to assess future growth potential.
- The Growth Team has the ability to support the CEO with a powerful Growth Pipeline™.

NEXT STEPS

- **Growth Pipeline Audit™**
- **Growth Pipeline as a Service™**
- **Growth Pipeline™ Dialogue with Team Frost**

Source: Frost & Sullivan

Frost Radar™ Empowers Investors

STRATEGIC IMPERATIVE

- Deal flow is low and competition is high.
- Due diligence is hampered by industry complexity.
- Portfolio management is not effective.

LEVERAGING THE FROST RADAR™

- Investors can focus on future growth potential by creating a powerful pipeline of Companies to Action for high-potential investments.
- Investors can perform due diligence that improves accuracy and accelerates the deal process.
- Investors can realize the maximum internal rate of return and ensure long-term success for shareholders.
- Investors can continually benchmark performance with best practices for optimal portfolio management.

NEXT STEPS

- **Growth Pipeline™ Dialogue**
- **Opportunity Universe Workshop**
- **Growth Pipeline Audit™ as Mandated Due Diligence**

Source: Frost & Sullivan

Frost Radar™ Empowers Customers

STRATEGIC IMPERATIVE

- Solutions are increasingly complex and have long-term implications.
- Vendor solutions can be confusing.
- Vendor volatility adds to the uncertainty.

LEVERAGING THE FROST RADAR™

- Customers have an analytical framework to benchmark potential vendors and identify partners that will provide powerful, long-term solutions.
- Customers can evaluate the most innovative solutions and understand how different solutions would meet their needs.
- Customers gain a long-term perspective on vendor partnerships.

NEXT STEPS

- **Growth Pipeline™ Dialogue**
- **Growth Pipeline™ Diagnostic**
- **Frost Radar™ Benchmarking System**

Source: Frost & Sullivan

Frost Radar™ Empowers the Board of Directors

STRATEGIC IMPERATIVE

- Growth is increasingly difficult; CEOs require guidance.
- The Growth Environment requires complex navigational skills.
- The customer value chain is changing.

LEVERAGING THE FROST RADAR™

- The Board of Directors has a unique measurement system to ensure oversight of the company's long-term success.
- The Board of Directors has a discussion platform that centers on the driving issues, benchmarks, and best practices that will protect shareholder investment.
- The Board of Directors can ensure skillful mentoring, support, and governance of the CEO to maximize future growth potential.

NEXT STEPS

- **Growth Pipeline Audit™**
- **Growth Pipeline as a Service™**

Source: Frost & Sullivan

Frost Radar™ Analytics



Frost Radar™: Benchmarking Future Growth Potential

2 Major Indices, 10 Analytical Ingredients, 1 Platform

VERTICAL AXIS

Growth Index (GI) is a measure of a company's growth performance and track record, along with its ability to develop and execute a fully aligned growth strategy and vision; a robust growth pipeline™ system; and effective market, competitor, and end-user focused sales and marketing strategies.

GROWTH INDEX ELEMENTS

- **GI1: MARKET SHARE (PREVIOUS 3 YEARS)**
This is a comparison of a company's market share relative to its competitors in a given market space for the previous 3 years.
- **GI2: REVENUE GROWTH (PREVIOUS 3 YEARS)**
This is a look at a company's revenue growth rate for the previous 3 years in the market/industry/category that forms the context for the given Frost Radar™.
- **GI3: GROWTH PIPELINE™**
This is an evaluation of the strength and leverage of a company's growth pipeline™ system to continuously capture, analyze, and prioritize its universe of growth opportunities.
- **GI4: VISION AND STRATEGY**
This is an assessment of how well a company's growth strategy is aligned with its vision. Are the investments that a company is making in new products and markets consistent with the stated vision?
- **GI5: SALES AND MARKETING**
This is a measure of the effectiveness of a company's sales and marketing efforts in helping it drive demand and achieve its growth objectives.

Frost Radar™: Benchmarking Future Growth Potential

2 Major Indices, 10 Analytical Ingredients, 1 Platform

HORIZONTAL AXIS

Innovation Index (II) is a measure of a company's ability to develop products/services/solutions (with a clear understanding of disruptive Mega Trends) that are globally applicable, are able to evolve and expand to serve multiple markets, and are aligned to customers' changing needs.

INNOVATION INDEX ELEMENTS

- **II1: INNOVATION SCALABILITY**

This determines whether an organization's innovations are globally scalable and applicable in both developing and mature markets, and also in adjacent and non-adjacent industry verticals.

- **II2: RESEARCH AND DEVELOPMENT**

This is a measure of the efficacy of a company's R&D strategy, as determined by the size of its R&D investment and how it feeds the innovation pipeline.

- **II3: PRODUCT PORTFOLIO**

This is a measure of a company's product portfolio, focusing on the relative contribution of new products to its annual revenue.

- **II4: MEGA TRENDS LEVERAGE**

This is an assessment of a company's proactive leverage of evolving, long-term opportunities and new business models, as the foundation of its innovation pipeline. An explanation of Mega Trends can be found [here](#).

- **II5: CUSTOMER ALIGNMENT**

This evaluates the applicability of a company's products/services/solutions to current and potential customers, as well as how its innovation strategy is influenced by evolving customer needs.

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