

# Using Biometrics and AI to Fill Gaps in Mainstream MFA

September 2023

[www.BIO-key.com](http://www.BIO-key.com)



# Safe Harbor Statement

All statements contained in this press release other than statements of historical facts are "forward-looking statements" as defined in the Private Securities Litigation Reform Act of 1995 (the "Act"). The words "estimate," "project," "intends," "expects," "anticipates," "believes" and similar expressions are intended to identify forward-looking statements. Such forward-looking statements are made based on management's beliefs, as well as assumptions made by, and information currently available to, management pursuant to the "safe-harbor" provisions of the Act. These statements are not guarantees of future performance or events and are subject to risks and uncertainties that may cause actual results to differ materially from those included within or implied by such forward-looking statements. These risks and uncertainties include, without limitation, our history of losses and limited revenue; our ability to raise additional capital; our ability to continue as a going concern; our ability to protect our intellectual property; changes in business conditions; changes in our sales strategy and product development plans; changes in the marketplace; continued services of our executive management team; security breaches; competition in the biometric technology industry; market acceptance of biometric products generally and our products under development; our ability to execute and deliver on contracts in Africa; our ability to expand into Asia, Africa and other foreign markets; our ability to integrate the operations and personnel of Swivel Secure into our business; fluctuations in foreign currency exchange rates; delays in the development of products and statements of assumption underlying any of the foregoing as well as other factors set forth under the caption "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2022 and other filings with the Securities and Exchange Commission. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date made. Except as required by law, we undertake no obligation to disclose any revision to these forward-looking statements whether as a result of new information, future events, or otherwise.

# BKYI at-a-Glance

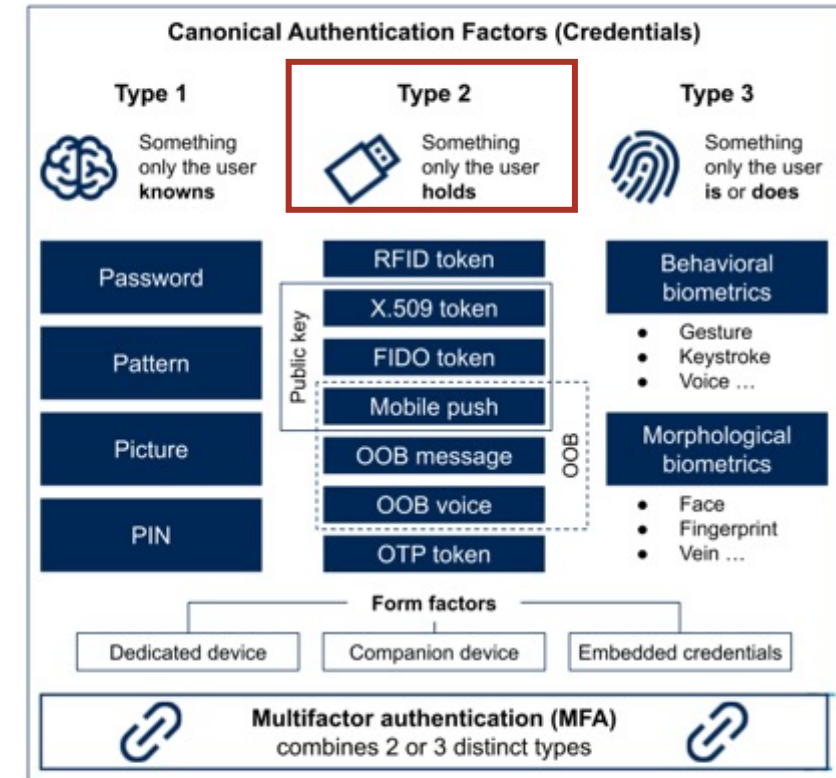


NASDAQ	BKYI
Recent Price	\$0.54
52-Week Range	\$0.46 - \$1.74
Shares Out	9.26m
Insider Ownership	1.05m    11.3%
Market Cap	\$5.0m
Net Working Capital	\$2.6m
Net Debt 6/30/23	\$2.3m
Enterprise Value	\$7.3m
LTM Revenue	\$8.1m
EV-to-LTM Revenue	0.9x
Annual Recurring Revenue	\$5.8m

- Larger comps (OKTA, FORG, CYBR, CHKP & S) trade at a median multiple of 6.8x.
- BIO-key estimates cash break-even within a revenue range of \$11m - \$13m.

# Passwordless is a Hot Topic, But Comes with a Downside

- **Passwordless** means moving from "**What you Know**" to one of the other two types of authentication.
- For **Mainstream MFA**, that means a "**What you Have**" factor, such as a FIDO hardware token, or a phone-based app.
- These solutions are not appropriate for mass workforces, are expensive and difficult to provision to roving workforces, e.g.
  - Manufacturing workers
  - Call center
  - Retail
  - Healthcare



Source: Gartner

X.509 = ITU-T Public-key and attribute certificate frameworks; FIDO = Fast Identity Online; OOB = out-of-band; OTP = one-time password  
771690

Gartner

# Consider FIDO Costs for Roving Use Cases

Yubico

Why Yubico

Products

Solutions

Industries

Resources

Support

Search

Subscribe

Store

Estimate your potential savings

Opt for greater flexibility with subscription, compared to a one-time perpetual purchase

Number of users

20000

Percent key replacement / yr

20% is typical

Calculate savings

How we calculate

3 yr total savings:

\$360,000

32%

off each key

11%

savings (3 yrs)

35%

more

Cost user/month:

\$3.94

Perpetual

52,000 keys

\$60 per key

\$75,000 services

\$3,195,000

(52,000 keys x \$60)

Subscription

70,000 keys

\$41 per key

\$0 services

\$2,835,000

(20,000 users x \$3.94/month for 3 years)

Subscription benefits

18,000 extra keys

save \$19 per key

\$75,000 services credit

\$360,000 saved

(3 year subscription)

The calculator shows a term of 3 years; recommended for greatest value to the business.

The unit price of a YubiKey has been calculated based on a blended price of our most popular keys in the Advanced Tier with the YubiEnterprise Subscription Plus plan.

Key replacement covers computer upgrades, loss of security keys, and employee turnover.

All calculations include recommended best practice of 2 keys per user: a primary and a backup.

Subscription

70,000 keys

\$41 per key

\$0 services

\$2,835,000

(20,000 users x \$3.94/month for 3 years)

Source: Yubico website pricing calculator for subscription vs token purchase

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BIO-key

# Phone Apps Work for Consumers, but Employees?

- Employees are often expected to leave phones in a locker
  - Clean Desktop – Call Center
  - No Distractions (Retail)
  - Safety (Manufacturing, Shop Floor)
- Several states and the EU require compensation for work-related personal phone use.
  - Under California law, "an employer shall indemnify his or her employee for all necessary expenditures or losses incurred by the employee in direct consequence of the discharge of his or her duties, or of his or her obedience to the directions of the employer." Cal. Lab. Code § 2802(a).
  - Unpaid compensation can lead to costly class action claims.



**Phone-less. Token-less. Passwordless.**



# Unique Capability Where Needed: Identity-Bound Biometrics

**Identity-Bound Biometrics** creates a **centralized** unique biometric identity that can be used to verify users anywhere, independent of what they have or know.

- Centrally-secured, privacy-law compliant biometrics
- Non-reversible hashed biometric data
- Strict session management
- Captured using USB fingerprint scanners or via BIO-key MobileAuth™



Cannot be phished, handed over, shared, forgotten, or stolen



Perfect for situations where phones and hardware tokens will not work, are costly, cumbersome, unreliable, or unsafe single points of failure



Enterprise-controlled enrollment



Affordable and easy to implement



# Software Products & Services

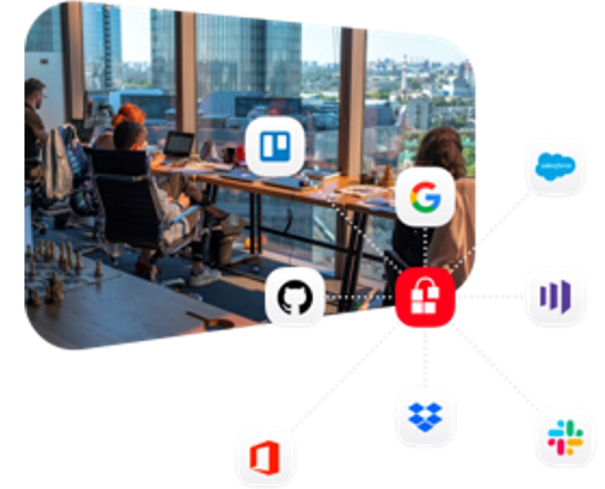
## PortalGuard... with Identity-Bound Biometrics

~91% of 2022 Revenue

**BIO-key PortalGuard®** is an award-winning Identity and Access Management (IAM) platform that can be deployed either in the cloud as an Identity-as-a-Service (IDaaS) solution or on-premises. PortalGuard offers flexible options for single sign-on, multi-factor authentication, contextual authentication and self-service password reset.

It is the only IAM platform offering **Identity-Bound Biometrics (IBB)** among its wide range of authentication methods. IBB is unique in permanently binding a biometric to the user's digital identity, to provide the highest level of integrity. BIO-key IBB solutions include:

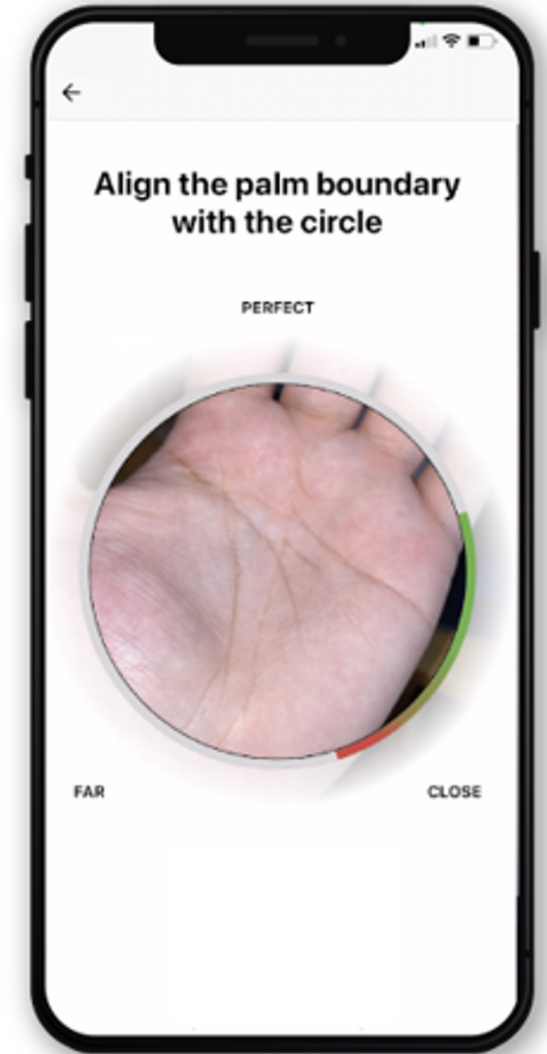
- **WEB-key®**, an industry-leading biometric authentication engine trusted by some of the most recognizable organizations such as Israeli Defense Forces and AT&T. WEB-key delivers best-in-class, enterprise-level security for projects of all scopes and sizes.
- **MobileAuth®** the only mobile app integrating Identity-Bound Biometrics with other authentication factors to deliver a more complete MFA strategy.



# Software Products

## MobileAuth™ – A Different Way to Authenticate

- **MobileAuth** is the only mobile app integrating Identity-Bound Biometrics with other authentication factors to deliver a more complete MFA strategy.
- **MobileAuth** offers server and on device secured ID modes including PalmPositive™ palm scanning and FacePositive™ facial recognition to securely integrate mobile devices with PortalGuard.
- **MobileAuth** also supports basic device-based biometrics including Apple Face ID and Touch ID, Android biometrics, and push token authentication.



# Hardware Products

## Fingerprint Scanners

~9% of 2022 Revenue

BIO-key offers Microsoft-qualified USB scanners for plug and play use with Windows Hello, Windows Hello for Business and BIO-key IAM solutions.

- Full line of secure, easy-to-use fingerprint readers for enterprises and consumers
  - Windows solutions and FIPS 201 compliant readers
- MSRPs from \$39.95 to \$90; ~60% normal gross margin









# Hardware Products

## Mobile POS & FIDO-keys

- **BIO-key MobilePOS Pro®** is a handheld, biometrically enabled, Android Point of Sale terminal. Includes fingerprint reader, thermal printer, 5-megapixel camera, WiFi, barcode & NFC scanners, mag stripe reader, long life battery and 5.5” touchscreen display.
- **BIO-key FIDO-keys®** - affordably priced FIDO2 security key lineup with USB-A, USB-C, Lightning (MacOS, iOS), NFC and iOS compatibility, along with FIPS 140-2 certified options with on-device biometric verification.



						
USB-A	•		•			
USB-C		•		•	•	•
Lightning (MacOS, iOS)						•
FIDO U2F	•	•	•	•	•	•
FIDO2	•	•	•	•	•	•
Biometrics					•	
OATH HOTP	•	•	•	•		•
NFC			•	•		
BLE						
NDEF (HOTP)			•	•		

# BIO-key Use Cases

## Reducing Cyber Risk

Prevent cyberattacks, including ransomware.

*300% increase in cybercrimes in the USA since the start of the pandemic.*

## Improving Usability

Users have too many passwords to remember

IT support flooded with password reset calls.

*Each password reset call costs \$70.*

## Reducing Costs

Enterprises have too many IAM solutions to manage with limited IT resources/cyber-expertise.

Top brands are too expensive for SMEs.

*BIO-key streamlines solutions, reducing vendor & IT team costs.*

## Compliance & Insurance

HIPAA, PCI, NYDFS & other compliance requires added security & privacy controls.

Cyber insurance requires enhanced controls, especially MFA.

*BIO-key enables regulatory & cyber insurance compliance.*

**Kathy Pinto | VP of IT  
Orange Bank & Trust**

"BIO-key provides both biometric authentication and a proven suite of IAM solutions that provide **greater** security, flexibility, and value over approaches offered by other vendors."





# BIO-key Customers

**McKESSON**  
Empowering Healthcare

 The First National Bank of Long Island

 **THE WORLD BANK**



 **Collier County**

 **UNIVERSITY of DENVER**

 **Henrico County VIRGINIA**

 **NATIONWIDE CHILDREN'S**  
*When your child needs a hospital, everything matters.™*

 **SINGAPORE POLICE FORCE**

 **شرطة دبي DUBAI POLICE**

 **NCR**

 **LOCKHEED MARTIN**

**Denka**

 **ORANGE Bank & Trust COMPANY**

 **LexisNexis™**

 **AEON CREDIT SERVICE**



**iQOR**



 **Cleveland Clinic**

 **vodafone**



 **UNITED STATES COURTS**

 **CAPITEC**



 **City of SACRAMENTO**

 **HERSHEY ENTERTAINMENT & RESORTS®**

 **MENDOCINO COLLEGE**

 **ORANGE COUNTY GOVERNMENT FLORIDA**

**BROOKDALE**  
UNIVERSITY HOSPITAL MEDICAL CENTER

 **Coca-Cola Canada**

 **Monash Health**

 **CLEARRENT™**

# Growing Strength of IP Portfolio

## 18 U.S. Patents including three recently issued

### ENABLING NEXT-GENERATION CONTINUOUS BIOMETRIC USER AUTHENTICATION (Patent 10,984,085)

- *Patent protects method of enabling next-generation continuous and passive biometric user experiences* with its process for enrollment and continuous authentication.
- BIO-key's intelligent data pre-processing and transformation algorithms sort through varying samples of biometric data, making reliable and accurate connections between samples of different sizes, resolution qualities and points of view – supporting continuous authentication of a user's identity during ongoing activity. Methods particularly valuable for mobile devices with in-screen fingerprint sensors, cameras and microphones providing a continuous stream of partial biometric samples over time.

### UTILIZATION of BIOMETRIC DATA (Patent 10,002,244)

- *Enables BIO-key to capitalize on the transition of mobile devices to in-screen, “under glass” biometric sensors* – though patent is broad enough to apply to sensors anywhere on a device.
- Patent leverages continuous stream of partial fingerprint, facial or other biometric captures that occur as user interacts with a device. Technique enables a continuous, passive authentication for greater security with little workflow impact.

### ADAPTIVE SHORT LISTS & ACCELERATION of BIOMETRIC DATABASE SEARCH (Patent 10,025,831)

- *Indexing method for quickly & iteratively searching a large-scale database of biometric records.*
- Large-scale Automated Fingerprint ID Systems like that used by the FBI were once the exclusive province of big-budget agencies and enterprises. BIO-key's method uses 1 or more scans of a database with varying parameters, narrowing the field of candidates with each pass. Provides unique advantage in delivering cost-effective, 1-to-many ID solutions that avoid costly, resource-intensive brute force scans.


**BIO-key is well positioned for inevitable growth in use of Identity Bound Biometrics**



# Growth Strategies



# BIO-key Positioned for Authentication Paradigm Shift

Netflix 2000		BIO-key 2023	
Netflix and Blockbuster delivered same result – <b>watching a movie</b>	Blockbuster <b>worked</b> , but consumers preferred the rent/return experience and predictable fee structure of Netflix	BIO-key and “Mainstream MFA” deliver same result – a user is authenticated into a digital destination.	Okta and FIDO <b>work</b> , but user experience/ enrollment is cumbersome, expensive and less secure.
<p>Netflix offered more <b>elegant, cost-effective</b> recurring, delivery process, without late fees.</p>  <p>The diagram illustrates the Netflix DVD rental process in four steps: 1. Create your list of DVDs online (Over 70,000 titles). 2. We rush you DVDs from your list (Free delivery). 3. Keep each DVD as long as you want (No late fees). 4. Return a movie to get a new one from your list (Prepaid return envelopes). The cycle is represented by a circular arrow connecting these steps, with a 'NO LATE FEES' sign prominently displayed.</p>		<p>BIO-key offers <b>effortless authentication experience including biometrics</b> that:</p> <ul style="list-style-type: none"><li>• <b>Cost less per user</b></li><li>• <b>Require no special deployment for each user</b></li><li>• <b>Protect against phishing or willful delegation</b></li><li>• <b>Removes excuses</b> for users being unable to authenticate, such as “forgot my token”</li></ul>	
Netflix’s streamlined, user-friendly, recurring service model won over the more complex, asset intensive, less user-friendly Blockbuster model.		BIO-key solves substantial security and useability challenges of TODAY with a revolutionary, more simple approach of authentication based on <b>who you are</b> , not transient possessions.	

# Recent Developments

- **Revenue grew 29%** to \$5.0M in 1H'23 vs. \$3.9M in 1H'22.
- **Net loss reduced 43%** to \$1.6M in 1H'23, driven by higher revenue and lower operating expenses.
- **Growing, robust pipeline of qualified larger revenue opportunities.** Recent Gartner conferences very productive in generating opportunities and engagement with major corporations.
- **August \$340K order from one of world's most respected government defense ministries significantly expanded its BIO-key deployment to secure access to information systems.** Order marks start of expanded deployment into new programs which will lead to additional orders.
- **Building PortalGuard IDaaS traction supporting healthcare migrations to Epic Hyperdrive,** including Dayton Children's Hospital, University of Iowa Hospitals and Paulding, Ohio Hospital.
- Growing customer footprint across geographies & markets.
- Expanding global distribution and partner network including with ***Intelisys, 3Eye, Savvy Info Tech,*** the ***AWS Partner Network, ForgeRock, & Pixel Infinito*** along with others in discussion.

# Leadership Team

- **Michael W. DePasquale – Chairman & CEO** 25+ years in executive management, sales and marketing.
- **Cecilia Welch – CFO** 20+ years of tech operational and financial management experience.
- **Mark Cochran – President PortalGuard** 20+ years of experience in Security and IAM markets.
- **Jim Sullivan – CLO, SVP Strategy** 25+ years enterprise sales in identity and access management, including with key customers AT&T World Bank IDF, Capitec Bank, NCR & Omnicell.
- **Alex Rocha – CEO of Swivel Secure Europe** Former sole stockholder of SSE with 20+ years sales & management experience in EMEA mkt.
- **Kelvin Wong – MD HK Subsidiary**, co-founder of World-Wide Touch Technology; 15+ years in manufacturing and marketing management, including biometrics & payments.
- **Akintunde Carlton JeJe – MD Africa** respected, experienced executive with extensive knowledge & relationships in Nigerian & African markets.
- **Mira LaCous – CTO** 30+ years solution development and product management.
- **Galen Rodgers – VP Sales & Channel** 20+ years in channel program development, marketing, value selling, management, cybersecurity, process automation, coaching & team building – most recently with Ping Identity Corporation.

# Investment Considerations

- **1H'23 Revenue Rose 29% to \$5M; TTM Revenue of \$8.1M**
- **\$5M Market Cap** (9.3M shares; \$0.54 recent price).
- **\$7.3M Enterprise Value** at 6/30/23.
- **EV/LTM Revenue Multiple 0.9x** vs. identity comps median of 6.8x (OKTA, FORG, CYBR, CHKP & S).
- **Growing Base of Annual Recurring Revenue of \$6M as of 6/30/23.**
- **Solid Global Growth Potential** for IAM solutions.-Broad Base of Solutions & End-Markets – Higher education; healthcare, government; regulated industries; and financial services; Work(Study) from Anywhere drives need for enhanced IAM.
  - Growing Channel Alliance Partnership Footprint – N. America, Europe, Middle East, Africa & Asia.
  - Growing Demand for Passwordless Biometric factors and in-cloud or hybrid solutions – BIO-key's unique suite of solutions allow enterprises to reduce costs, enhance security and improve the user experience.
  - Focused sales & marketing efforts target large enterprise deals, supported by channel partner efforts.
  - Africa contracts provide significant upside potential.
- **Continued Innovation Leadership** - BIO-key's veteran engineering team continues to pioneer new features and solutions and build IP portfolio.

# Thank You

**Company Contact:**

Michael DePasquale  
Chairman & CEO

michael.depasquale@bio-key.com  
732.359.1100

**Investor & Media Contacts:**

William Jones; David Collins

Catalyst IR

bkyi@catalyst-ir.com  
212.924.9800

