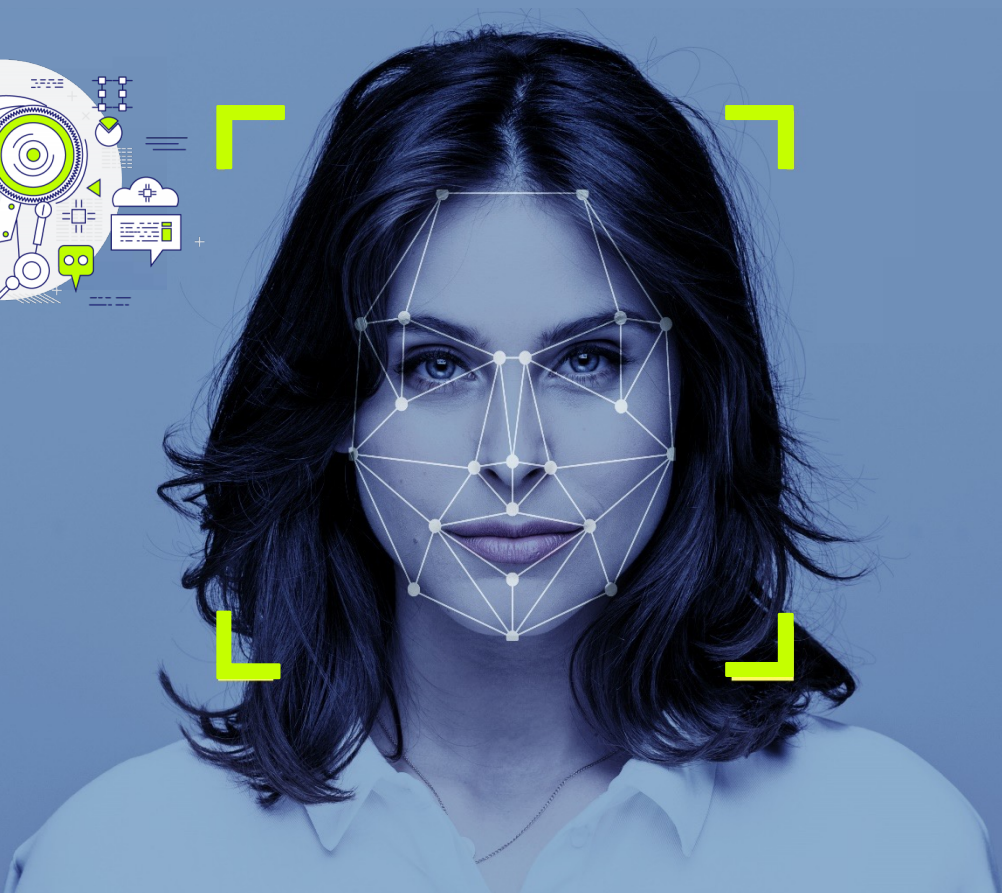


■ Facial Recognition

Sector Update, June 2021



- 1** MARKET TRENDS
- 2** BUSINESS ECOSYSTEM
- 3** M&A TRANSACTIONS
- 4** FUNDRAISING
- 5** PUBLIC PEERS COMPARABLES

Key Trends in Global Facial Recognition Market

Complementing the growth in Digital Banking and Finance

Digital banking increasingly feeds to the notion that the people need banking and not banks. Facial recognition technologies are addressing the requirements in on-location security and identity verification.



EdTech industry adopts AI-based online proctoring

COVID is pushing the adoption of facial recognition in the education sector. Tailored supervised examination using facial recognition in proctoring is being used, when physical setups are not feasible.



Deployment in healthcare for advanced analysis and screening

In healthcare, facial recognition is being instrumental not only for securing data but also preliminary screening as well as diagnostic analyses. Being contactless and non-invasive, the advantages are manifold.



The emerging role of Smart City Initiative

Municipal authorities are finding diverse applications in administration (license plate registration checks, law and order, etc.). Many Asian countries with high population density are taking a phased deployment.



Border Control

By end-2020, the US Customs and Border Protection used facial recognition on over 23 million travelers with 97% match rate. “Contactless Corridors” are planned in UK/rest of Europe for border screening/checks.



Online and Offline Retail Deployment

Retail stores are deploying this for greater personalization, payment processing and a seamless experience. In online retail, it is instrumental in developing payment modes for faster and secure transactions.



Contactless Access Management in Smart Buildings

Industries such as Gaming, Casinos as well as other high security venues have a significant role for facial recognition technologies.



Emotion recognition and decoding

Online facial expression analysis and emotion decoding solutions enable firms to derive critical customer insights to shape decisions on product pitching and marketing campaigns.



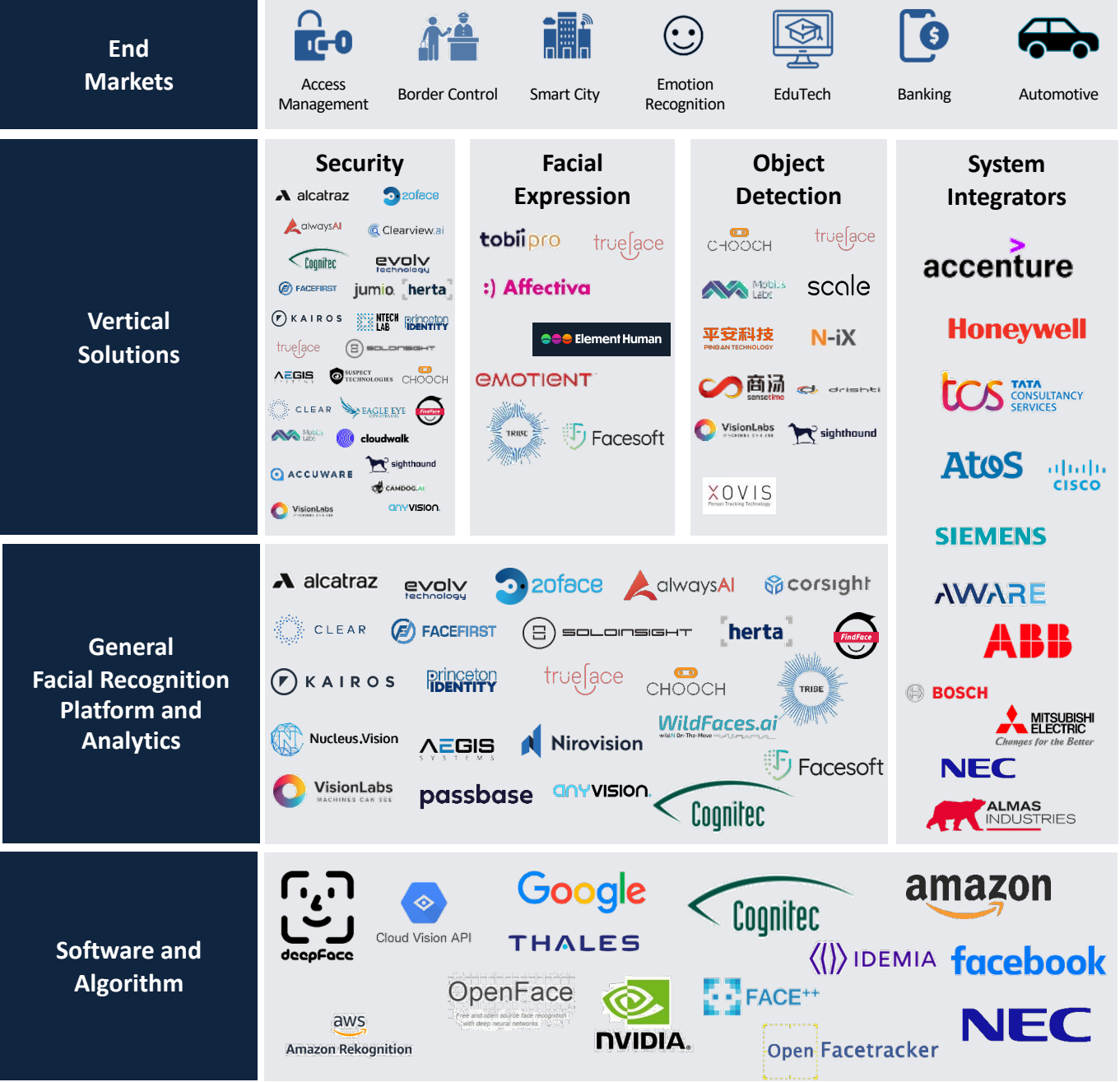
Automotive industry’s demand for facial recognition

Technology progress is being led by both OEMs and startups for key areas such as driver safety, security authentication, etc.



Facial Recognition – Emerging Ecosystem




































- Wider Adoption & Use Cases** - Large and proliferating number of use cases related to facial recognition technology in the last decade
- Democratization** - The facial recognition eco-systems are getting democratized, thanks to convergence in technological trends such as AI/ML, open-source algorithms, edge computing, etc
- Verticalization** - As new use cases and application of facial recognition technology emerge, we are witnessing the emergence of new vertical focused facial recognition vendors
- Business Model Shift**- Move towards SaaS and managed services business model utilising cloud computing and big data analytics to capture more value at end markets



M&A Catalyst

- Current pandemic is reshaping human interaction and facial recognition/ analytics attracts buyers from different verticals willing to open up new product lines and target customers with flexible and innovative business models
- Technology infrastructure upgrade is underway by security and biometric vendors targeting those with AI/ML capability in facial recognition

Relevant M&A Transactions

Date	Target	Buyer	Target Description	Value (\$ million)
2-June-21			US based leader in computer vision technologies.	
1-June-21			Provides Ai based voice and face biometrics and liveness detection	
5-May-21			SaaS 3D computer vision for construction industry.	
21-Apr-21			Offers AI-based video analytics software.	
06-April-21			Strengthening video analytics and LiDAR capabilities	
21-January-21			Leading software developer that uses AI and ML	
29-Sep-20			Cloud-based anti-money laundering and compliance.	
28-Sep-20			Security products, services and solutions.	285.1
3-Aug-20			Technology enhancements for smart camera.	
1-Jul-20			Computer vision and image analysis.	
2-April-20			Provider of biometric authentication solutions for background checks.	
10-Jun-20			Deep Learning-based computer vision products	
19-May-20			AI-based technologies for retail industry	4.6
13-Mar-20			End to end video security solutions.	32.4
7-Jan-20			Identity assurance, management, and credentialing	
5-Nov-19			AI, machine learning and computer vision.	
25-April-19			Facial recognition in aviation and construction security	
17-May-19			Video, audio and tracking surveillance equipment.	

Key Transactions to Highlight

Atos

Acquired



About the transaction:

In April 2021, the global IT services firm Atos announced finalisation of an agreement to acquire the London-based video analytics firm Ipsotek.

Backdrop and rationale:

“With this strategic move, Atos is reinforcing its leading position in Edge and Computer Vision and complementing its existing end-to-end offering in Edge AI/ML.” Pierre Barnabé, Senior Executive Vice President, Global Head of Big Data & Security at Atos.



Acquired



About the transaction:

In June 2021, Pangiam a technology-based security and travel services provider, announced its acquisition of Trueface, a US based leader in computer vision.

Backdrop and rationale:

“We are excited to welcome Trueface to the Pangiam family. Shaun and Nezare are pioneering thought leaders whose advances in computer vision have the potential to drive innovation in identity management, data labeling and biometrics,” Pangiam CEO Kevin McAleenan




CEO Alfredo Herrera
Headquarters Dresden, Germany
Founded 2022
Investor 
Capital raised NA

One of the pioneers of the facial recognition market, Cognitec has been instrumental in shaping this industry.

The co-founders Alfredo Herrera and Dr. Jürgen Pampus were working on algorithms for the FaceVACS technology since 1995. Cognitec’s portfolio includes products for facial database search, video screening and analytics, border control, ICAO compliant photo capturing and facial image quality assessment

“The global situation has spurred our research and development efforts for facial images with major occlusions”, **Alfredo Herrera, CEO, Cognitec**



CEO Ankur Jain
Headquarters Miami, US
Founded 2012
Investor 
Capital raised €11.84M

Kairos is a venture-backed organisation, specialising in AI-based facial recognition solutions. Key investors include Kapor Capital, New World Angels, Florida Institute, 500 Startups and Backstage Capital.

Kairos’ key product offering lies in its API platform that simplifies the developers’ and business’ integration of human identity into their software

“Over the next five years, a series of emerging technologies will shape these industries in entirely new ways,” **Ankur Jain, CEO, Kairos**




CEO Avi Golan
Headquarters Tel Aviv, Israel
Founded 2015
Investor 
Capital raised €102.28M

AnyVision specializes in providing AI-based visual solutions. It caters to enterprises across the globe in creating physical security experiences for their customers and employees.

AnyVision’s solutions are mainly built to function on different cameras or sensors, with any resolution. They provide authentication and onboarding software that harnesses the power of deep learning platform.

“Facial recognition is only starting to be harnessed by industry to streamline operations and improve employee safety”, **Avi Golan, CEO, Anyvision**



CEO Doug Aley
Headquarters San Francisco, US
Founded 2013
Investor 
Capital raised €44.2M

Paravision is a computer vision company that specializes in face recognition technology. Its computer vision software is specifically used by global security device manufacturers, solution providers, systems integrators, and financial services firms.

Paravision’ offers vision-centric solutions with modular, highly scalable toolsets coupled with AI platforms to cloud-ready solutions.

“..there is an increasing demand for face recognition from enterprises and governments worldwide to improve safety, security, and convenience ”, **Doug Aley, CEO, Paravision**



Key Investment Trends/Use Cases
















- Contactless access management system that is enabled through facial recognition.
- Technology and solutions related to eKYC and digital identity.
- Computer Vision platforms that process data form various image sources for predictive analytics.
- Facial recognition search engines for law enforcement and due diligence applications.
- Digital identity verification using computer vision, natural language processing, etc.
- New age biometric authentication platform, integrating facial recognition and ID verification.

Use Case

CHOOCH Clearview.ai

UNICO ADVANCE.A

CLEAR paravision

Date	Organization	Funds Raised	Lead Investors	Total Funding
11-May-21	 cloudwalk	\$190.0M	PLUGANDPLAY COATUE	\$195.0M
29-Apr-21	 actuate	\$8.0M	TVP THREBLA VENTURE PARTNERS	\$10.3M
27-Apr-21	 alcatraz	\$6.1M	-	\$20.0M
21-Apr-21	 HIVE	\$50.0M	GENNY CAPITAL	\$120.7M
16-Feb-21	 DEX	\$57M	SUSA NEXTGEN VENTURE PARTNERS Illuminate	\$64M
15-Jan-21	 CAMDOG.AI	-	OMERS VENTURES	-
26-June-20	 SOLINK	CAD\$23.0M		\$40.0M
16-June-20	 drishti	\$25.0M	SOZO VENTURES	\$37.0M
14-Sep-20	 Sentinel	\$1.4M	UnitedAngelsVC	\$1.4M
3-Sep-20	 anyvision.	\$43M	Lightspeed M2 BOSCH	\$117.0M
17-Sep-19	 Trulico Building Trust Online	\$52.9M	Goldman Sachs	\$80.7M
31-Jul-19	 trueface	\$3.7M	SCOUT VENTURES LAYBROCK ADVANTAGE VENTURES	\$5.0M
24-Jun-19	 wrnch.ai	\$7.5M	TANDEMLAUNCH Radical Investments Nikon	\$9.3M
19-Feb-19	 KAIRO S	\$3.5M	NEW WORLD ANGELS	\$11M
10-Sep-18	 商汤 senseime	\$1,000.0M	IDG Capital TIGERGLOBAL Alibaba Group	\$2.6B

Key Investments to Highlight




\$43m Series B funding

About the investment

As on September 2020, Anyvision announced \$43 million in Series B funding. It was towards scaling up its touchless access control and remote authentication products.

Backdrop and rationale

While the backers for the latest funding rounds were not disclosed, the firm’s total funding rounds since July 2018 amount to \$117m. Anyvision has had strong demand in sectors of banking, travel, healthcare and online gaming services.



\$6.1m added in new capital

About the investment

As on April 27, 2021, Alcatraz AI raised \$6.1m in new capital, thus bringing its total funding to \$20 million. It is aimed at reinforcing the offerings in access control.

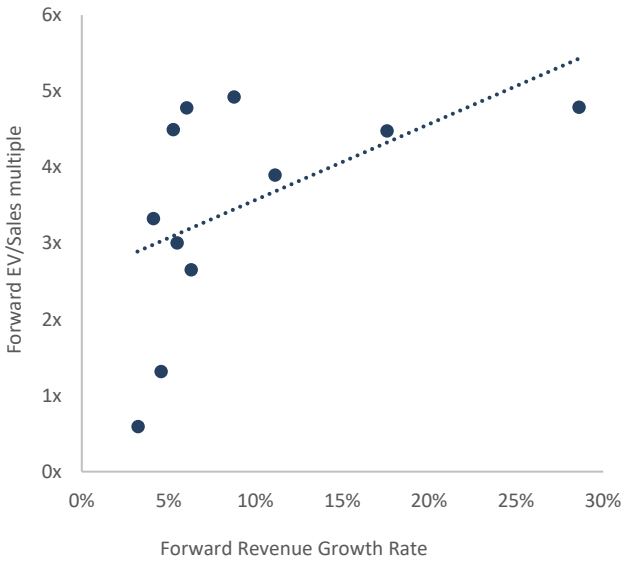
Backdrop and rationale

Investors include Ray Stata; Hardware Club; Mucker Capital; JCI Ventures, the venture capital arm of Johnson Controls; and LDV Partners. Alcatraz AI’s hardware and software enterprise-grade solutions are key for market leadership in access control.

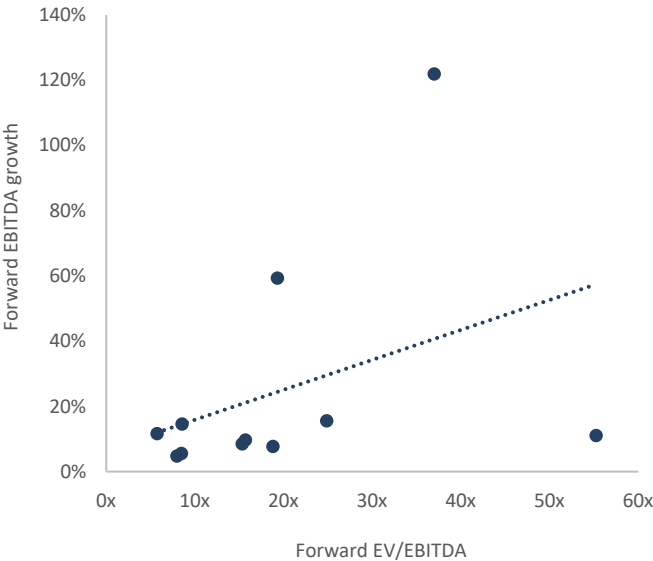
Public Peers utilizing Facial Recognition Technology
(Applications in biometrics, access control and video analytics)

Identifier	Company Name	EV (€m)	Stock price (€)	Market cap (€m)	Revenue (LTM, €m)	EBITDA (LTM, €m)	EV/Reveue (LTM)	EV/EBITDA (LTM)
CAT.AX	Catapult Group	255.64	2.13	265.0	NA	7.7	4.6x	39.2x
600734.SS	Fujian Start Group Co Ltd	381.86	2.12	171.8	46.09	-40.9	2.5x	NA
BARI.NS	Bartronics India Ltd	1.35	3.55	1.3	NA	0.8	5.7x	74.1x
2458.TW	Elan Microelectronics	1,579.83	208.50	1,830.3	503.67	128.6	3.2x	10.8x
MSI	Motorola Solutions Inc	33,180.31	209.85	29,282.1	6,332.50	1,515.6	5.2x	20.2x
ASSAb.ST	Assa Abloy AB	28,867.50	257.00	26,658.2	8,552.85	1,594.3	3.4x	18.3x
6701.T	NEC Corp	14,476.38	5,050.00	10,372.5	23,587.14	2,475.3	0.6x	5.6x
ADT	ADT Inc	15,506.57	10.50	7,442.8	4,388.37	1,793.9	3.5x	8.5x
ALLE.K	Allegion PLC	11,367.29	137.94	10,268.5	2,303.64	533.9	4.9x	20.5x
ALRM.O	Alarm.com Holdings Inc	3,155.22	78.08	3,266.9	533.37	78.6	5.9x	37.2x
DOKA.S	Dormakaba Holding AG	2,914.97	611.00	2,333.2	2,177.67	305.5	1.3x	10.7x
YSNG.DE	Secunet Security Networks AG	2,468.37	384.50	2,551.3	324.17	59.7	8.6x	41.3x
FINGb.ST	Fingerprint Cards AB	844.76	33.12	884.8	128.11	5.2	6.7x	NA
NSSC.O	NAPCO Security Technologies	488.51	32.86	502.8	85.29	12.6	5.7x	41.5x
300270.SZ	Joyware Electronics Co.	178.25	5.30	201.6	NA	-16.6	6.8x	NA
Median							4.9x	20.4x
Mean							4.6x	27.3x

Forward Sales Growth vis-à-vis EV/Sales multiple



Forward EBITDA Growth vis-à-vis EV/EBITDA multiple



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