

bioscrypt<sup>®</sup>

enterprise access control

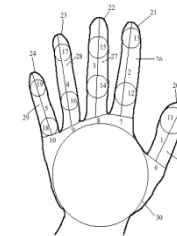
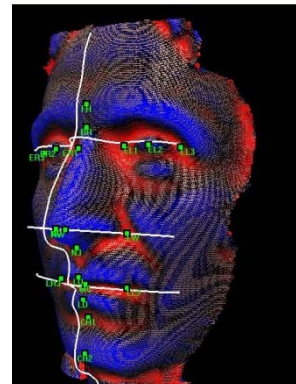
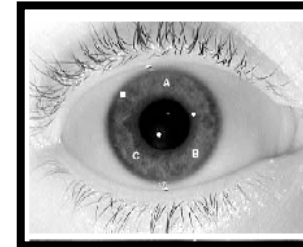
# **Advanced Biometric Solutions for Secure Access Control**

[www.bioscrypt.com](http://www.bioscrypt.com)

# Biometrics?

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- Identification based on physical characteristics of the individual
  - Fingerprint
  - Face
  - Iris
  - Hand Geometry



## Company Overview

- Bioscrypt is a leader in enterprise access control solutions. Best known for its “Veri-series” fingerprint products.
- Named Global Market Leader in biometric access control worldwide (IMS research, June 2007)
  - Over 20% market share in Americas
  - At least 10% of the global market
- Installed base of 250,000+ physical access control devices



## **A new biometric solution**

- Based on face recognition
- Using an advanced 3D technology
- Introduced by Bioscrypt in 2007
- Based on more than 5 years of R&D

## What is 3D Face Recognition?

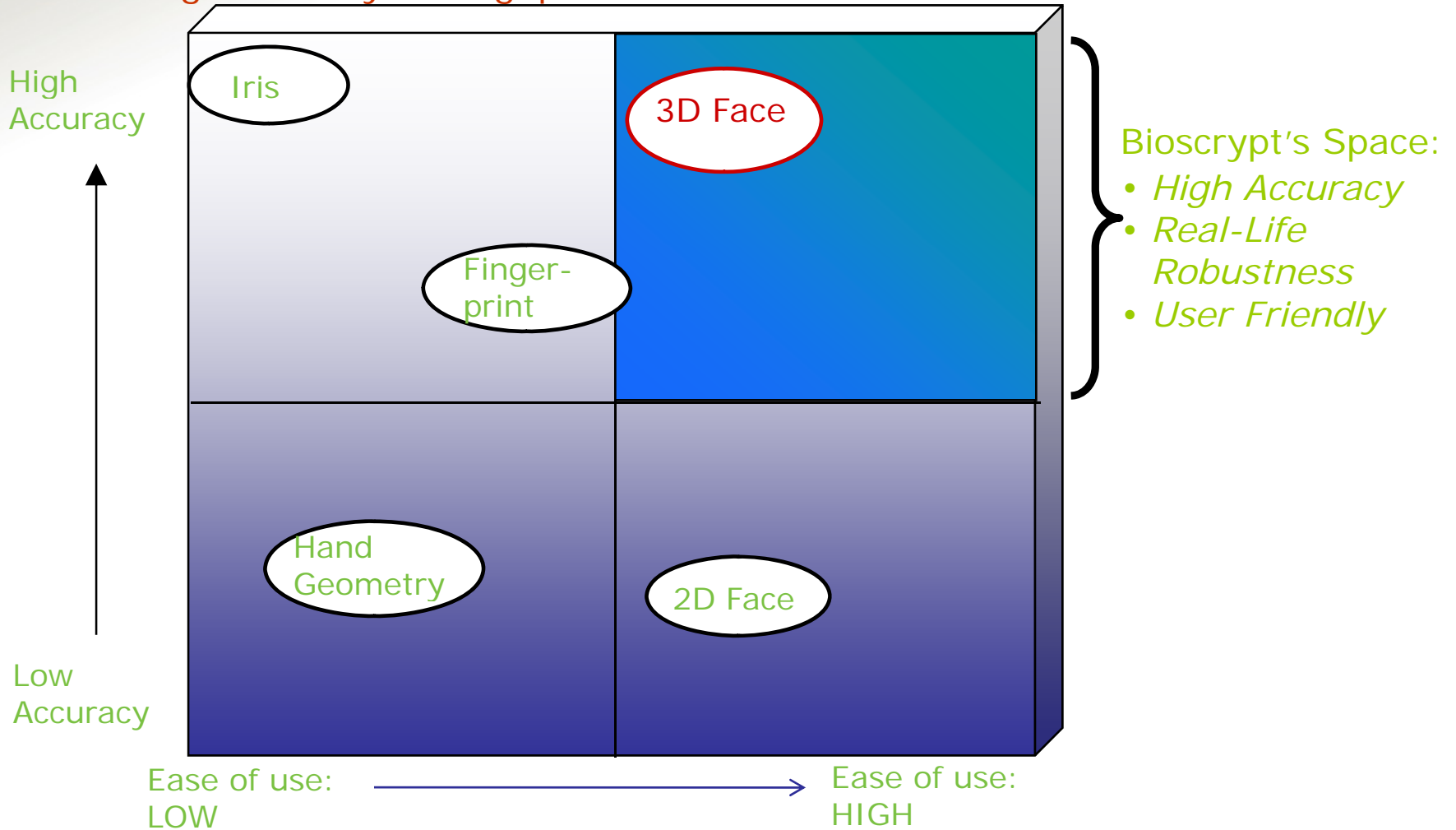


2D Photo



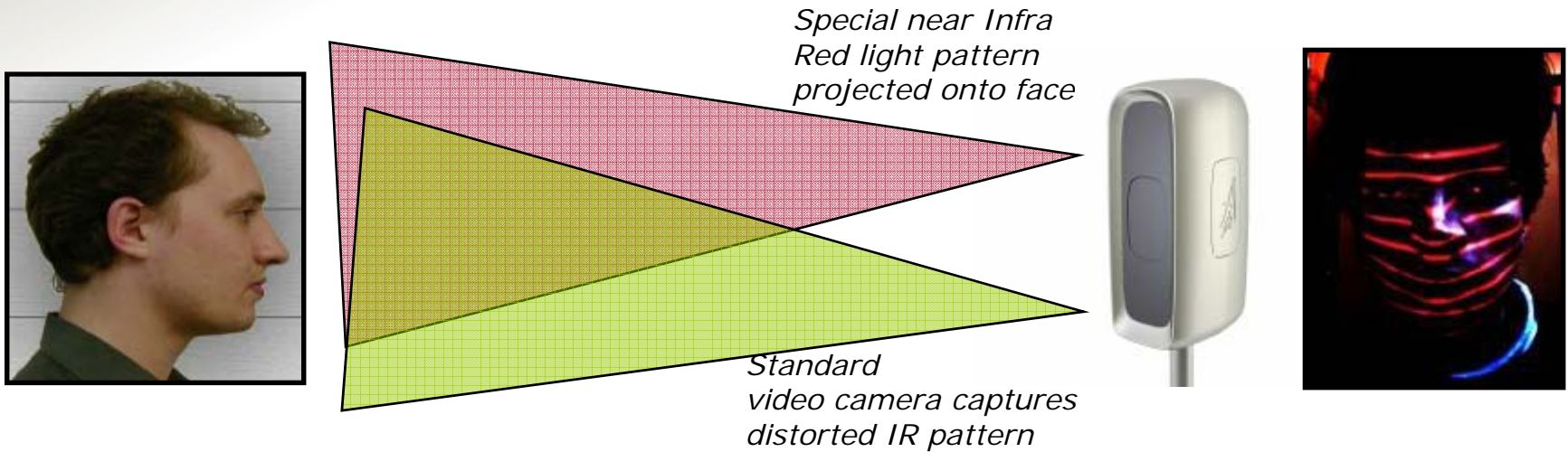
3D Image

3D Face Recognition allows a unique combination of high accuracy and high usability/throughput



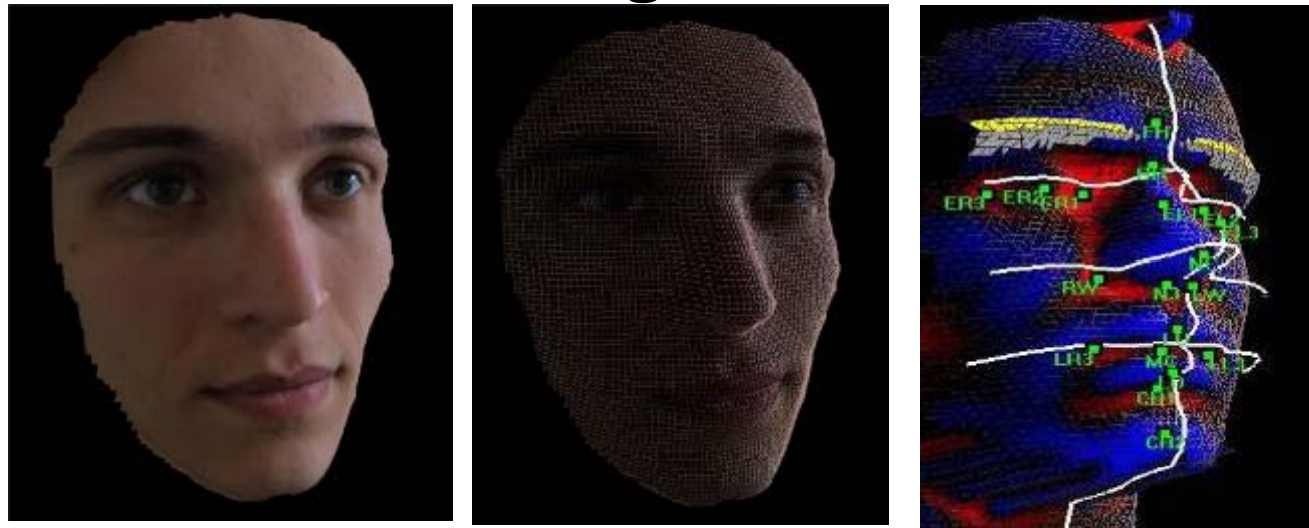
# bioscrypt<sup>®</sup> 3D Camera

## 3D camera based on structured light



- Invisible near IR light - non-invasive & user friendly
- Eliminates lighting problems & permits both night & day vision
- Real-time video feed (25 frames/second):
  - Ensures minimal cooperation
  - Robustness to angles & motion
- Compact 3D camera system is low cost and flexible to deploy

## Software: 3D Recognition



### Real-Time Reconstruction & Analysis of the 3D face surface

- Face geometry reconstructed in sub-millimeters
  - Real ground-based measurement capturing x-y-z axes
- Facial feature extraction based on underlying cranial structure
  - Skull is unique & unchanging over time
  - Allows differentiation of “identical” twins
- Compact biometric template extracted (4KB)
- Real-time identification in under 1 second

## 3D Product Advantages

- High Accuracy
  - Can differentiate between identical twins
- Robust & Accurate in real-life environments
  - Invariance to lighting, including darkness
  - Robust to angles up to 30° for enhanced ease of use
  - Cannot be spoofed by videos or photos
  - No Failure to Enrol
- Ergonomic & User Friendly
  - Fast & easy positioning through visual and audio feedback
  - Hands free
- High Throughput
  - Real time video capture & matching for high speed recognition
  - Verification or identification in under 1 second
- Non-Invasive & Privacy Enhancing
  - Use of invisible light spectrum for passive, non intrusive recognition
  - No privacy or cultural issues with use of face for identification

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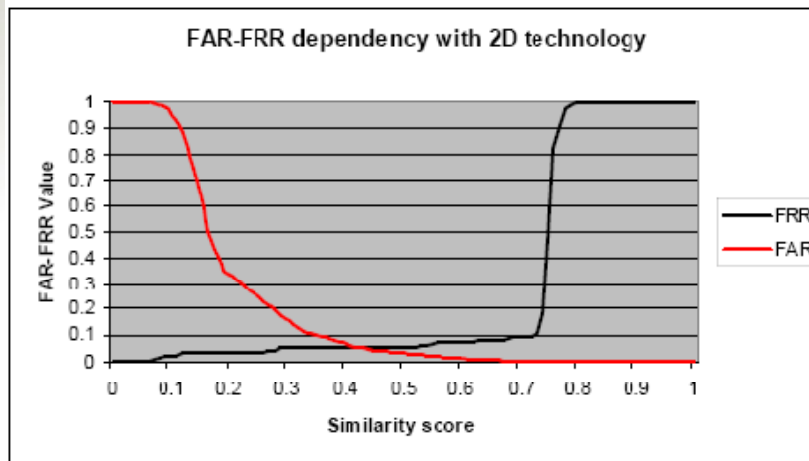
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**Trial of 3D & 2D Face  
Recognition:  
Singapore Immigration &  
Checkpoints Authority (ICA)**

# Enrolment Process

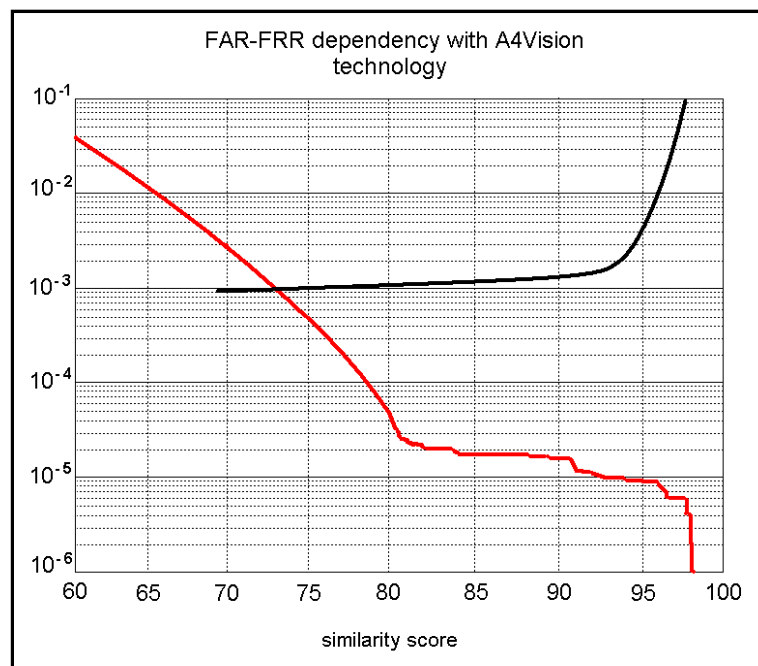
- Tests conducted by Unisys for Singapore Immigration & Checkpoints Authority (ICA)
- Enrolment Process
  - Number enrolled ~ 1018
  - 72% of Asian culture
  - 45% wearing glasses
  - Time of experiment – daily, during 1 month
- Enrolled simultaneously high-resolution 2D image & 3D image for all participants
- 3D Face Enrolment Results
  - 98.3% automatic enrolment
  - 1.7% required manual support by operator
  - 0% Failure to Enrol
  - 3-5 seconds enrolment time
- Verification
  - Average Verification Time under 2 seconds





## 2D Face Recognition

- False Accept Rate of 0.12%
- False Reject Rate 9.79%
- Over 1 person (imposter) per 1,000 falsely accepted, with nearly 1 in 10 legitimate users rejected



## 3D Face Recognition

- False Accept Rate of 0.0047%
- False Reject Rate of 0.103%
- Only 47 imposters per million falsely accepted, with 1 in 1,000 falsely rejected



success



a4vision-003398-2005....  
15.43.49.jpg



a4vision-003399-2005....  
15.43.59.jpg



a4vision-003400-2005....  
15.44.30.jpg

## Official ICA Test Results

- 3D Facial Recognition achieved better results than 2D Facial Recognition for all tests on the same images at the same time
- 3D Facial Recognition works
  - Able to successfully verify, at least once with more than 2 attempts, 99.7% of participants.
  - On 3 of the 4 weeks 100.0% of participants were verified on this criterion.
- 98.7% verification rate (1:1) was achieved
  - After adjustment for incorrect verification attempts (those with bad positioning, or person not in frame)

# Philip Morris International

Access Control

30 entrances

3,000 employees

Used with Legic smart card



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# PMI

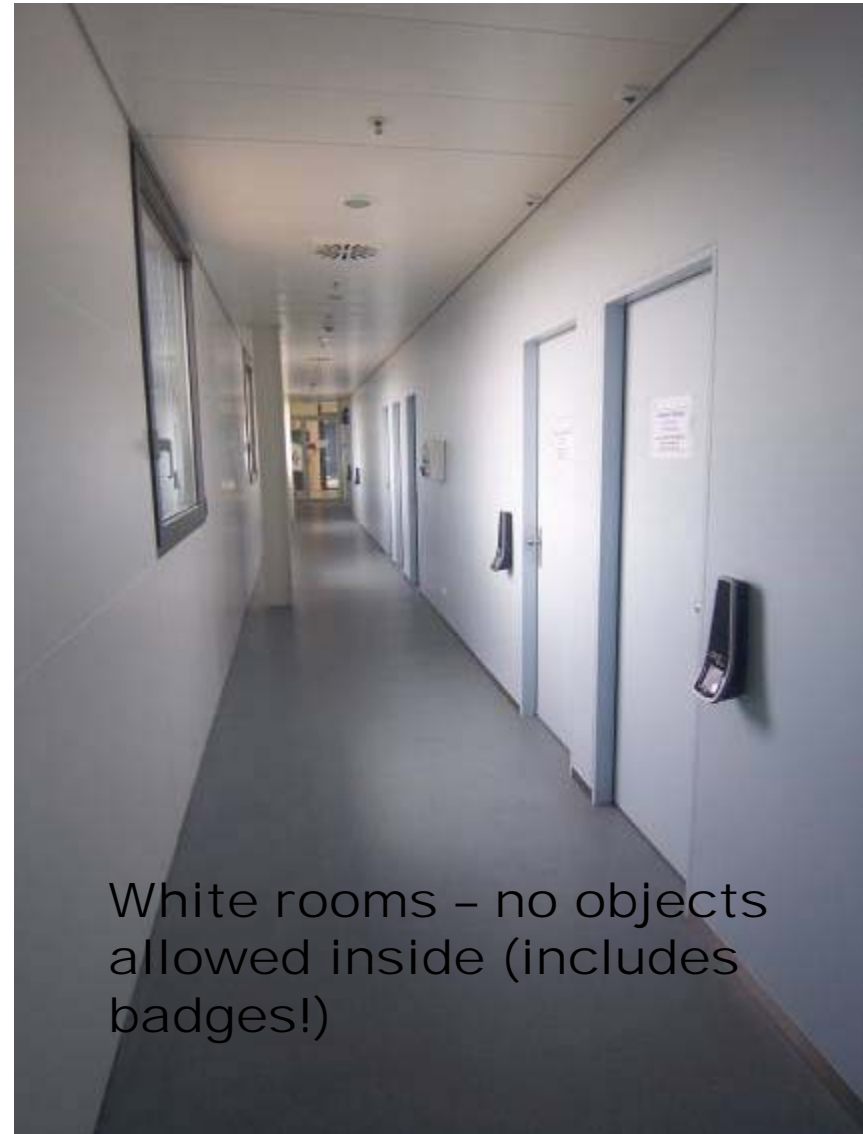


# Celgene BioPharma



Access control and T&A  
10 entrances  
150 users

# Celgene



White rooms - no objects allowed inside (includes badges!)

## Venetian Casino Macau



Largest casino in the world

Phase 1  
Time & Attendance

Uses HID iClass cards

Further phase planned  
for VIP entrances

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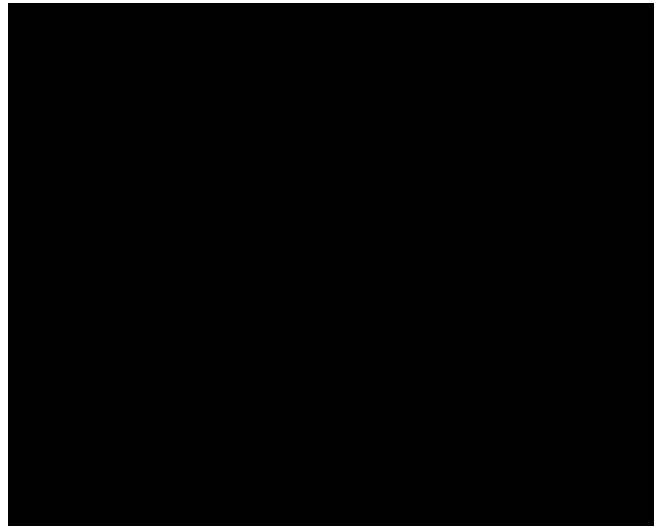
# Hong-Kong



## Pictet Bank (110 entrances)



# Private Bank in Switzerland



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# Thank you

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