



# BIOSECURE - A6

## Biosecure Multimodal Biometric Database

Responsible Partner: Universidad Politecnica de Madrid (UPM)

Responsible Person: Javier Ortega-Garcia (UPM)

Contact Person: Julian Fierrez (UPM), [julian.fierrez@uam.es](mailto:julian.fierrez@uam.es)



## Participants: Responsible Persons

01. UVIGO (C. Garcia-Mateo)
02. BU (L. Akarun)
03. EPFL (A. Drygajlo)
04. GET (S. Salicetti)
05. JR (H. Ganster)
06. UNIFRI (J. Hennebert)
07. UNIKENT (F. Deravi)
08. UNIS (J. Kittler)
09. UNISS (M. Tistarelli)
10. UPF (A. Frangi)
11. UPM (J. Ortega-Garcia)

### Retired:

1. AMSL-BIO (J. Dittmann)
2. CWI (B. Schouten)
3. FE-UNILJ (N. Pavesic)
4. FER (S. Ribaric)
5. FUB (M. Falcone)



## Participants: Contact Persons

01. UVIGO: Jose L. Alba ([jalba@gts.tsc.uvigo.es](mailto:jalba@gts.tsc.uvigo.es))
02. BU: Lale Akarun ([akarun@boun.edu.tr](mailto:akarun@boun.edu.tr))
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11. UPM: Julian Fierrez ([julian.fierrez@uam.es](mailto:julian.fierrez@uam.es))

OTHER CONTACT PERSONS RELATED TO BIOSECURE-A6: Coordination ([Julian.Fierrez@uam.es](mailto:Julian.Fierrez@uam.es)), Management (Jean-Paul Lefevre, [JPLefevre@compuserve.com](mailto:JPLefevre@compuserve.com)), Legal Issues ([Christine.Hegele@int-evry.fr](mailto:Christine.Hegele@int-evry.fr)), Evaluation Campaign ([Gerard.Chollet@enst.fr](mailto:Gerard.Chollet@enst.fr))



## Datasets: Overview

### DS1 (Internet): Voice, face → COMMON (2 sessions minimum)

PC-based, on-line, unsupervised (Internet), 1100 donors approx., 11 ACQUISITION SITES (ALL)

Responsible: UVIGO (C. Garcia-Mateo), Contact: [DS1@gts.tsc.uvigo.es](mailto:DS1@gts.tsc.uvigo.es)

### DS2 (Desktop): Voice, face, signature, fingerprint, iris, hand → EXTENDED (2 sessions minimum)

PC-based, off-line, supervised, 700 donors approx., 7 ACQUISITION SITES

Responsible: UPM (J. Ortega-Garcia), Contact: [Julian.Fierrez@uam.es](mailto:Julian.Fierrez@uam.es)

### DS3 (Mobile): Voice, face, signature, fingerprint → EXTENDED (2 sessions minimum)

PDA-based, indoor/outdoor, 800 donors approx., 8 ACQUISITION SITES

Responsible: GET (S. Salicetti), Contact: [Lorene.Allano@int-evry.fr](mailto:Lorene.Allano@int-evry.fr)



## Site Distribution

DS1(Internet): ALL (11)

DS1,DS2(Desktop): UPM, UNISS, UVIGO, JR, UNIS, GET, UNIKENT (7)

DS1,DS3(Mobile): GET, UPM, UNIKENT, UNIFRI, EPFL, BU, UPF, UNIS (8)

DS1,DS2,DS3: UPM, GET, UNIS, UNIKENT (4)



## Donor Profile

- **DS1, DS2, DS3:** same donors for the 3 DSs
- **Number of donors:** minimum number of complete donors = 100 → recommended initial recruitment = 120 donors
- **Sessions:** 2 sessions (minimum) for each DS
- **Gender:** Balanced 50% ( $\pm$  10%)
- **Age:** 18 – 25: 35%; 25 – 40: 35%; >40: 30% ( $\pm$  5%)
- **Availability of donors during the acquisition campaign:** Nov06 – March07
- **English proficiency:** at least to be able to read English phrases
- **Webcam availability:** at home or work (if not, DS1 acquired on site)
- **Registration Data:** Name + Surname; age; gender; handedness; glasses/contact lenses; manual workers/users; native language
- **Native Languages:** Native Donor's Language = Native Site's Language
- **How to utter PINs:** digit by digit (not grouping) without pauses between digits

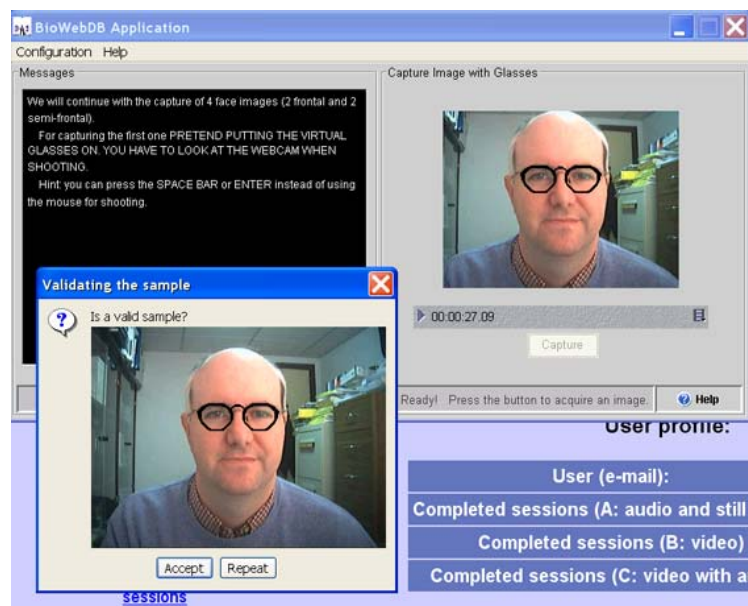
A unique numeric identifier is assigned to each donor in the database. This unique identifier consists of 5 digits. The former 2 digits identify the acquisition site (01 - UVIGO, 02 - BU, 03 - EPFL, 04 - GET, 05 - JR, 06 - UNIFRI, 07 - UNIKENT, 08 - UNIS, 09 - UNISS, 10 - UPF, 11 - UPM). The latter 3 digits correspond to an increasing numeric identifier assigned to the donor by the supervisor of the Acquisition Site (starting in 001). The identifier has to be the same established in the other datasets acquired by this Acquisition Site in order to obtain a universal numeric identifier for every donor in the Database. It is an important task for the supervisor to check for the consistency of all those numeric identifiers assigned to the donors into his Acquisition Site.

Examples (first user ID):

- UVIGO: 01001
- GET: 04001
- JR: 05001
- UNIKENT: 07001

## Internet Dataset (Dataset 1 -DS1)

- Acquisition software by UVIGO, local server at each acquisition site, download from <http://www.gts.tsc.uvigo.es/~eli/ds1/>



- EQUIPMENT: low-cost webcam acquired by each partner, e.g., Philips SPC 900NC
- For details, see: 20061113\_BIOSECURE\_A6DS1Spec\_UVIGO.pdf

## Internet Dataset (Dataset 1 -DS1)

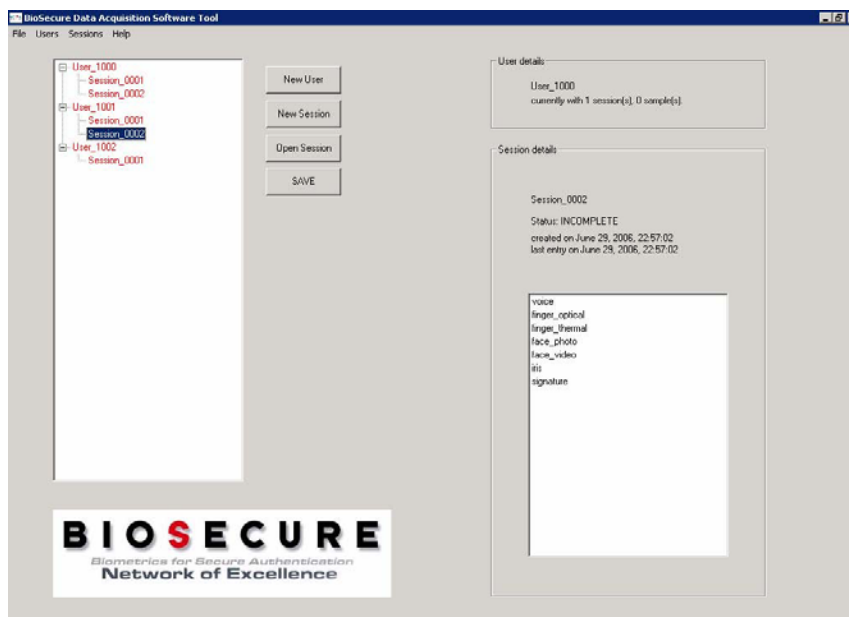
- Acquisition protocol (per session, total duration per session around 20 minutes, *COMMON to the 3 DSs*):

Mode ID	Sample ID	Data Type	Contents
I	1-2	Image	2 still frontal face images
C	1-2	AV	2 repetitions of a 4-digit PIN code (the same between DSs) from a set of 100 different PINs in English
C	3-4	AV	2 repetitions of a 4-digit PIN code (different to C1-2, the same between DSs) from a set of 10 different PINs in native language
D	1	AV	Digits from 0 to 9 in English
S	1-2	AV	2 different phonetically rich sentences in English (different between DSs)
S	3-4	AV	2 different phonetically rich sentences in native language (different to S1-2, different between DSs)

- For details, see: 20061113\_BIOSECURE\_A6DS1Spec\_UVIGO.pdf

## Desktop Dataset (Dataset 2 –DS2)

- Acquisition software by UPM, download from <http://atvs.ii.uam.es/Download/BioSecure> (user and password sent on 10-nov-06 by Manuel Freire), maintained by Manuel Freire (UPM) [m.freire@uam.es](mailto:m.freire@uam.es)



- For details, see: 20061113\_BIOSECURE\_A6DS2Spec\_UPM.pdf

## Dataset 2: Equipment and Setup

300 €	PHILIPS SPC 900NC + PLANTRONICS Voyager 510			<p>The webcam setup is also valid for DS1</p> <p>More details in: 20061113_BIOSECURE_A6DS2Spec_UPM.pdf</p> <p>More details in: 20061113_BIOSECURE_CANONSetupVII_UNIS-UVIGO.pdf</p>
2,000 €	Bought by UNIS, lent by UPM to the remaining partners	LG IrisAccess EOU3000		
50 €	BIOMETRIKA FX2000			
50 €	YUBEE (Atmel FingerChip)			
300 €	WACOM Intuos A6 + Inking Pen			
1,500 €	CANON EOS 30D + Ring Flash			

## Dataset 2: Acquisition Protocol

- Per session, total duration per session around 20 minutes:

Mode	Sample	Data Type	Sensor	Contents
SI	1-5	Signatures	Tablet	5 genuine of donor $n$
SI	6-10	Signatures	Tablet	5 dynamic imitations of donor $n - 1$ ( $n-3$ session 2)
SI	11-15	Signatures	Tablet	5 genuine of donor $n$
SI	16-20	Signatures	Tablet	5 dynamic imitations of donor $n - 2$ ( $n-4$ session 2)
SI	21-25	Signatures	Tablet	5 genuine of donor $n$
<i>COMMON – AUDIO / VIDEO (simultaneously with the webcam and the bluetooth earbud)</i>				
IR	1-4	Iris images	Iris cam	(Right eye → Left eye) x 2 times
FO	1-12	Fingerprints	Optical	(R_thumb → R_index → R_middle → L_thumb → L_index → L_middle) x 2
FT	1-12	Fingerprints	Thermal	(R_thumb → R_index → R_middle → L_thumb → L_index → L_middle) x 2
HA	1-8	Hand	Camera	(Right hand x 2 times → Left hand x 2 times) without flash → (THE SAME) with flash
FA	1-4	Face	Camera	2 photos without flash → 2 photos with flash (ISO-like conditions)

# Mobile Dataset (Dataset 3 –DS3)

- EQUIPMENT:

HP iPAQ hx2790

*Fingerprint and Signature*

500 €



SAMSUNG Q1 + WebCam

*Face and Voice*

1,000 €



- SETUP:

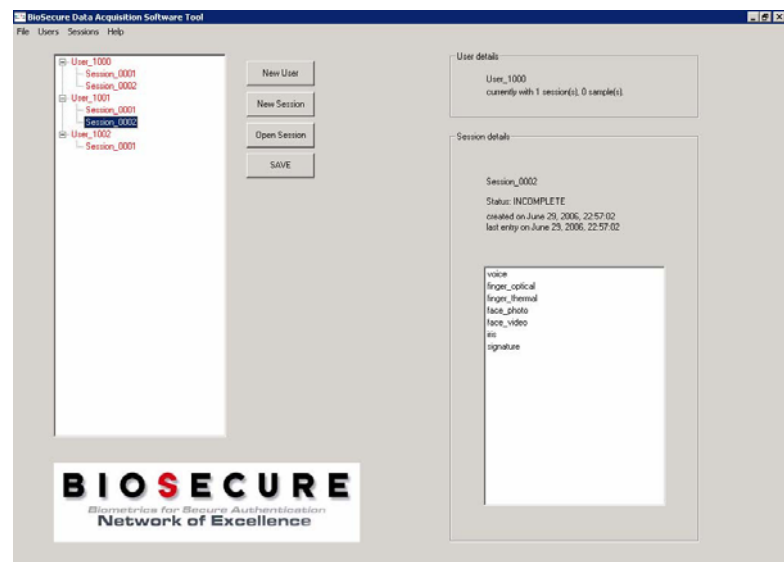
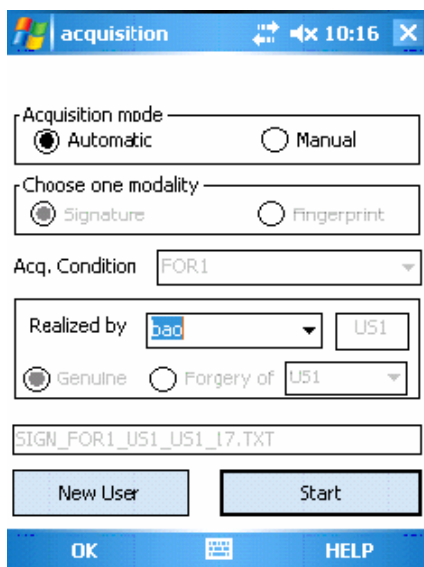
(Indoor/Outdoor Acquisition)



More details in:  
20061113\_BIOSECURE\_A6DS  
3Spec\_GET.pdf

# Mobile Dataset (Dataset 3 –DS3)

- Software developed by GET (PDA, left image, maintained by [Lorene.Allano@int-evry.fr](mailto:Lorene.Allano@int-evry.fr)) and UPM (Q1, right image, maintained by [m.freire@uam.es](mailto:m.freire@uam.es)). Both of them available at <http://atvs.ii.uam.es/Download/BioSecure> (user and password were sent on 10-nov-06 by [m.freire@uam.es](mailto:m.freire@uam.es))



- For details, see: 20061113\_BIOSECURE\_A6DS3Spec\_GET.pdf

- Per session, total duration per session around 20 minutes:

Mode ID	Place	Sample ID	Data Type	Sensor	Contents
SI	Indoor (standing)	1-5	Sign	iPAQ	5 signatures of donor $n$
SI	Indoor (standing)	6-10	Sign	iPAQ	5 dynamic imitations of donor $n-1$ ( $n-3$ session 2)
SI	Indoor (standing)	11-15	Sign	iPAQ	5 signatures of donor $n$
SI	Indoor (standing)	16-20	Sign	iPAQ	5 dynamic imitations of donor $n-2$ ( $n-4$ session 2)
SI	Indoor (standing)	21-25	Sign	iPAQ	5 signatures of donor $n$
FT	Indoor (standing)	1-12	Finger	iPAQ	(R_thumb → R_index → R_middle → L_thumb → L_index → L_middle) x 2
<i>COMMON – AUDIO / VIDEO (Q1 + WebCam) – INDOOR</i>					
<i>COMMON – AUDIO / VIDEO (Q1 + WebCam) – OUTDOOR</i>					

- For details, see: 20061113\_BIOSECURE\_A6DS3Spec\_GET.pdf

## A6 Agenda

- June06:** specifications of sensors, acquisition protocol, legal issues, financial aspects, ... → written commitment to participate as acquisition sites
- July06:** testing of the acquisition setup by the responsible partners (UVIGO, UPM, GET)
- July06:** UVIGO+UPM+GET (developers & contact persons) meet at UAM (few days) → all supervisors meet at UAM (1 day) → reference documents for ALL SITES
- Aug06-Oct06:** testing of the acquisition setup in ALL SITES with feedback to the contact persons of each dataset (UVIGO, UPM, GET)
- Nov06-March07:** acquisition of 2 sessions (minimum) by ALL SITES
- Jan07:** availability of data (1 session) at least from UVIGO (DS1), UPM (DS2), and GET (DS3) to be used as development data for the evaluation campaign
- Early 2007:** Announcement of the Biosecure evaluation campaign
- April07-May07:** availability of data for the Biosecure evaluation campaign to be used as sequestered data & final version of Biosecure Multimodal DB
- Sep07:** results and conclusions of the Biosecure evaluation campaign



Partner	Session 1 Start	Session 1 End	Session 2 Start	Session 2 End
UVIGO	-	-	-	-
BU	-	-	-	-
EPFL	-	-	-	-
GET	-	-	-	-
JR	-	-	-	-
UNIFRI	-	-	-	-
UNIKENT	-	-	-	-
UNIS	-	-	-	-
UNISS	-	-	-	-
UPF	-	-	-	-
UPM	2006-11-13	-	-	-

## Equipment:

- Purchased and invoiced by each partner
- Except in few cases, in which the equipment is shared:
  - Iris camera lent by UPM to UNISS and UNIKENT
  - UPM iris camera shared with UVIGO
  - Thermal fingerprint sensors lent by UPM

## Funding for the acquisition campaign (51% of A6 funding, 197 k€):

- Funding shared according to the contribution to different DSs, 50% installment in advance, no funding for equipment or additional donors, participants funded for a good quality acquisition (quality of samples, completeness of procedure). Initial estimation:
  - 23,897 k€: GET, UNIKENT, UNIS, UPM
  - 15,881 k€: UVIGO, JR, UNISS
  - 13,381 k€: BU, EPFL, UNIFRI, UPF

## Funding for the management of the legal issues (7% of A6 funding, 27 k€):

- Participants: UPM (Leader: J. Ortega-Garcia, Contact: [Julian.Fierrez@uam.es](mailto:Julian.Fierrez@uam.es)), AMLS-BIO (Responsible: J. Dittmann), GET (Responsible: [Christine.Hegele@int-evry.fr](mailto:Christine.Hegele@int-evry.fr))

## ACQUISITION:

- Legal framework:  
[http://ec.europa.eu/justice\\_home/fsj/privacy/law/index\\_en.htm](http://ec.europa.eu/justice_home/fsj/privacy/law/index_en.htm) (95/46/EC)  
+ national laws and regulations  
[http://ec.europa.eu/justice\\_home/fsj/privacy/law/implementation\\_en.htm](http://ec.europa.eu/justice_home/fsj/privacy/law/implementation_en.htm)
- Each acquisition partner will act as CONTROLLER of its own data
- Donors have to sign a consent agreement:
  - Template proposed by UPM:  
20061113\_BIOSECURE\_ConsentMultimodalDatabase\_UPM.doc
  - Partners are encouraged to adapt the template to the national laws/regulations (including translation)

## DISTRIBUTION:

- The 11 individual databases will be distributed jointly (Biosecure MDB):
  - Joint Ownership Agreement (being developed), may prohibit the individual distribution by each site, will include IPRs sharing
  - License Agreement (being developed), will depend on the distribution method:
    - Third party, e.g., <http://www.elda.org/>
    - Biosecure Foundation? EEIG? other possibilities?