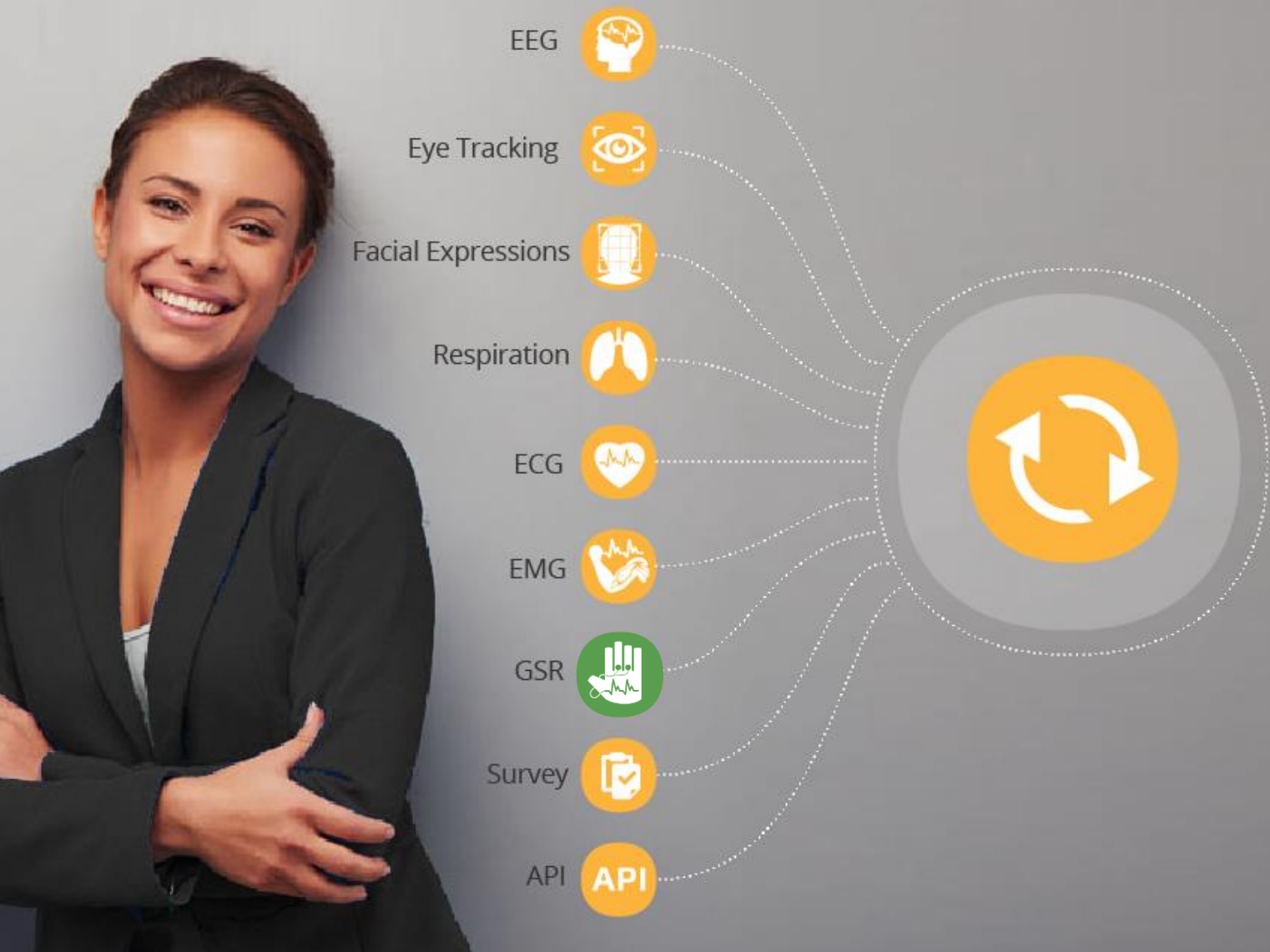# Module: Shimmer GSR

Base & Advanced Packages

Shimmer3 GSR Wireless Device
Pre-requisite: iMotions Core License

EEG

Eye Tracking

Facial Expressions

Respiration

ECG

EMG

GSR

Survey

API

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sales@imotions.com

Shimmer GSR Module

Enables iMotions software to connect to the Shimmer GSR device. The Module is divided in Basic & Advanced Packages

Shimmer3 GSR wireless device:

Shimmer3 GSR device provides real-time physiological data collection and wireless streaming with high-quality, scientifically reliable data. The Shimmer3 monitors & wirelessly transmit skin conductivity GSR (Galvanic Skin Response) and optical heart rate between two reusable electrodes attached to two fingers of one hand and heart rate with a third electrode. Measured as increases in perspiration at the surface of the skin, a byproduct of sympathetic nervous system activity, GSR represents a measure of arousal or interest.

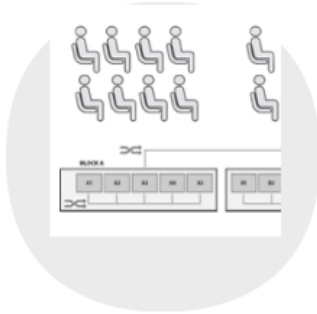| FEATURES	Basic Module	Advanced Module
GSR Signals	√	√
Optical Heart Rate Stream	√	√
Accelerometer Signals	√	√
Stimuli Presentation	√	√
Real Time Synchronization	√	√
Raw Data Export	√	√
Visualizations Export	√	√
Live / Post Markers	√	√
Individual & Aggregated View	√	√
Signal Quality Assurance	√	√
Battery Level Report	√	√
GSR Peak Aggregation		√
Multi-Shimmer Integration		√

Some users of iMotions Shimmer GSR Module

The Shimmer GSR Module has the iMotions Core License as pre-requisite, which allows you to:

Present all Type of Stimuli
Present images, videos, websites, games, screen & scene recordings, real world products and surveys.

Create Sophisticated Studies
Full flexibility to design any study setup with randomizations, block designs, test plans, group rotations and more.

Real-Time Synchronization
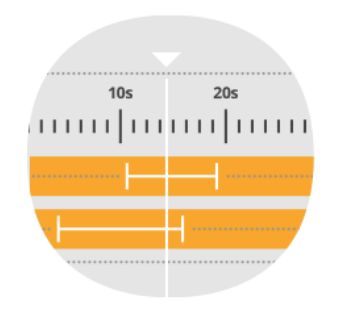GSR data, stimuli and any other sensor data streams are real time synchronized.

Export Raw Data
Export all collected GSR data in sync with stimuli and other sensors in .txt format for easily import into MatLab and other statistical programs.

Get Quality Assurance
Monitor data collection quality at any given time to ensure the validity of the studies.

Create Live or Post Markers
Mark important happenings during data collection or in replay mode to facilitate the analysis.

View Individual & Aggregated
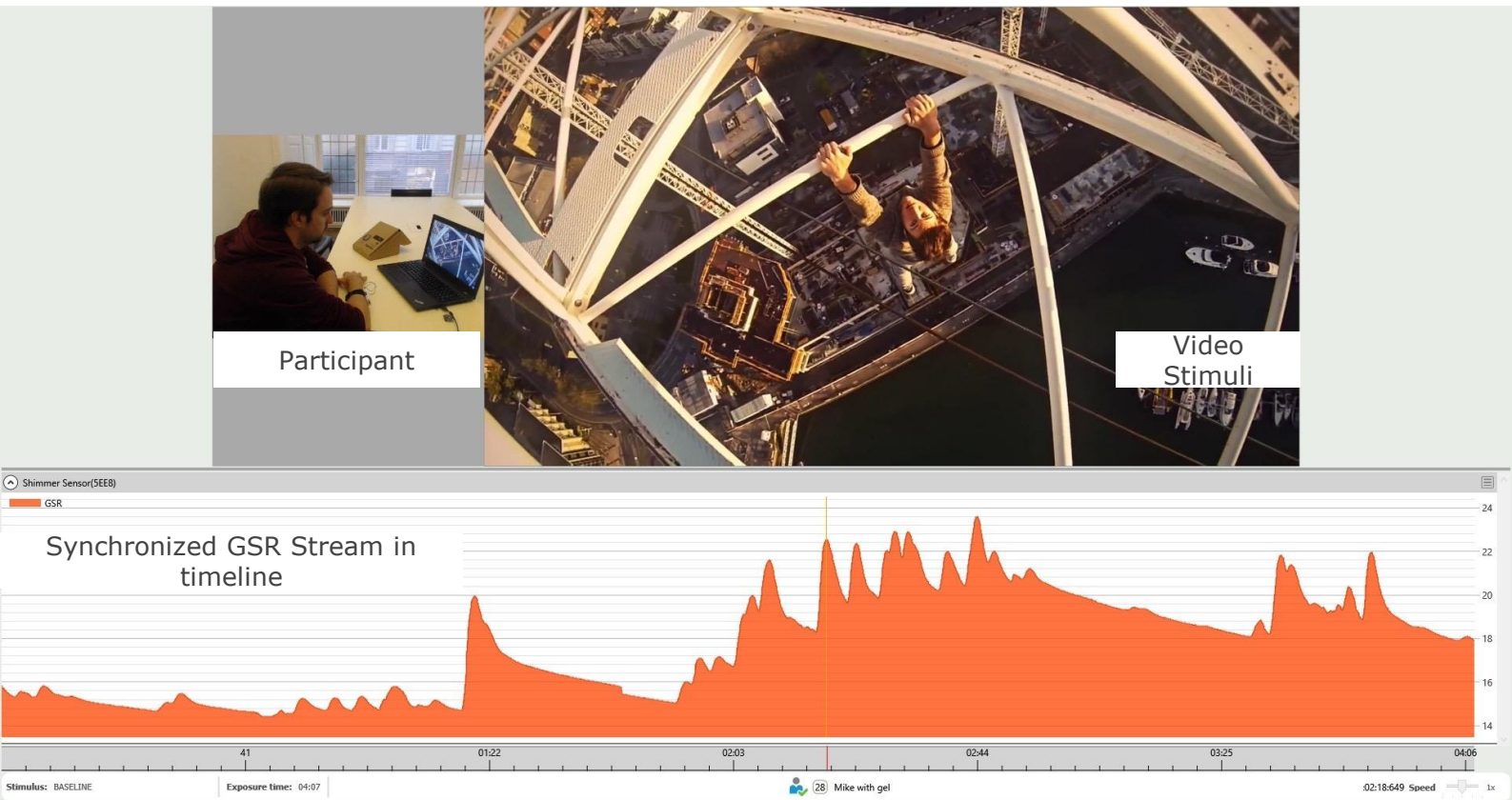Get visualisations whether individually or aggregated in any type of segmentation and export them as images and/or videos

Execute Studies in a Lab and/or Mobile Environments
iMotions Shimmer GSR Module is a wireless system that allows for any study design, whether this is a controlled environment setup or a mobile scenario where respondents move freely in a space.

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The Shimmer GSR module delivers visualizations of collected GSR data in sync with any type of stimuli

Participant

Video Stimuli

Synchronized GSR Stream in timeline

Synchronized GSR raw data is also available by the click of a button

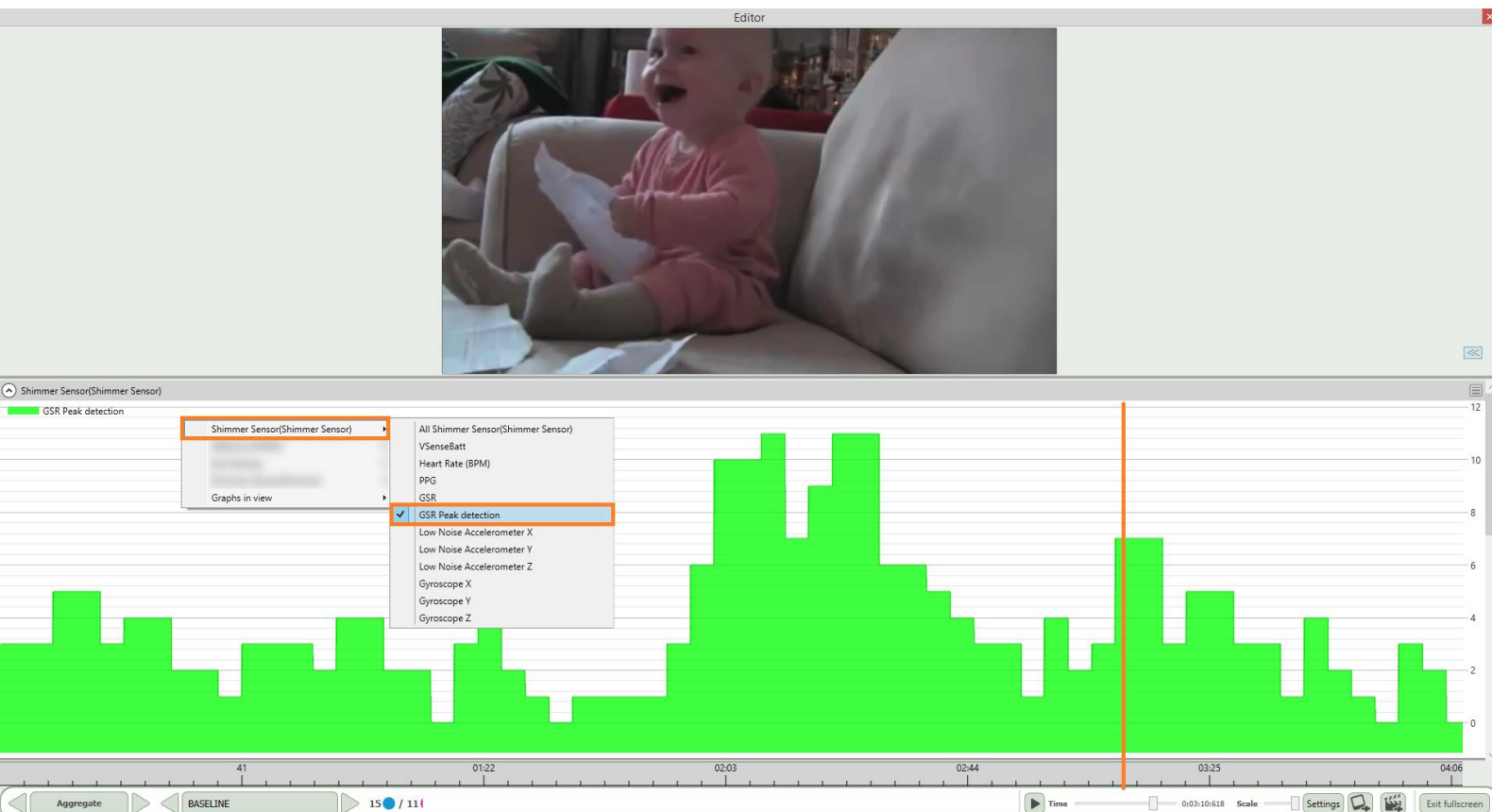| StimulusName	SlideType	Timestamp	MediaTime	Cal Timestamp (5EE8)	Cal VSenseBatt (5EE8)	Cal Heart Rate [BPM] (5EE8)	Cal GSR (5EE8)	GSR Valid Value (5EE8)
BASELINE	TestImage	20151030_104845058	0	203769.5313	3831.501832	146	15.8656	VALID
BASELINE	TestImage	20151030_104845063	0	203779.2969	3831.501832	146	15.8605	VALID
BASELINE	TestImage	20151030_104845063	0	203789.0625	3834.432234	146	15.8656	VALID
BASELINE	TestImage	20151030_104845073	0	203798.8281	3834.432234	146	15.8605	VALID
BASELINE	TestImage	20151030_104845083	0	203808.5938	3815.384615	146	15.8656	VALID
BASELINE	TestImage	20151030_104845093	0	203818.3594	3832.967033	146	15.8605	VALID
BASELINE	TestImage	20151030_104845103	0	203828.125	3830.03663	146	15.8605	VALID
BASELINE	TestImage	20151030_104845119	0	203837.8906	3828.571429	146	15.8554	VALID
BASELINE	TestImage	20151030_104845119	0	203847.6563	3822.710623	146	15.8554	VALID
BASELINE	TestImage	20151030_104845128	0	203857.4219	3809.52381	146	15.8554	VALID
BASELINE	TestImage	20151030_104845139	0	203867.1875	3830.03663	146	15.8554	VALID
BASELINE	TestImage	20151030_104845154	0	203876.9531	3832.967033	146	15.8503	VALID
BASELINE	TestImage	20151030_104845163	0	203886.7188	3824.175824	146	15.8503	VALID
BASELINE	TestImage	20151030_104845170	0	203896.4844	3830.03663	146	15.8503	VALID
BASELINE	TestImage	20151030_104845188	0	203906.25	3810.989011	146	15.8503	VALID
BASELINE	TestImage	20151030_104845189	0	203916.0156	3821.245421	146	15.8503	VALID
BASELINE	TestImage	20151030_104845200	0	203925.7813	3835.897436	146	15.8452	VALID
BASELINE	TestImage	20151030_104845227	0	203935.5469	3830.03663	146	15.8452	VALID
BASELINE	TestImage	20151030_104845228	0	203945.3125	3832.967033	146	15.8452	VALID
BASELINE	TestImage	20151030_104845232	0	203955.0781	3832.967033	146	15.8452	VALID
BASELINE	TestImage	20151030_104845243	0	203964.8438	3813.919414	146	15.8452	VALID
BASELINE	TestImage	20151030_104845244	0	203974.6094	3830.03663	146	15.8452	VALID
BASELINE	TestImage	20151030_104845254	0	203984.375	3821.245421	146	15.8401	VALID
BASELINE	TestImage	20151030_104845267	0	203994.1406	3831.501832	146	15.835	VALID
BASELINE	TestImage	20151030_104845277	0	204003.9063	3822.710623	146	15.835	VALID
BASELINE	TestImage	20151030_104845287	0	204013.6719	3812.454212	146	15.835	VALID
BASELINE	TestImage	20151030_104845297	0	204023.4375	3832.967033	146	15.8401	VALID
BASELINE	TestImage	20151030_104845309	0	204033.2031	3835.897436	146	15.835	VALID
BASELINE	TestImage	20151030_104845322	0	204042.9688	3822.710623	146	15.8299	VALID

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Shimmer GSR Advanced Package

Enables to automatically detect peaks in the GSR data of participants & aggregate them in any customized segmentation. It also allows the integration of up to 7 Shimmers whether they are GSR, EMG or ECG devices collecting data at the same time.

1. Automatic Peak Detection Aggregation

Image shows visualizations of stimulus (video) and Peak Detection aggregation in time line. The numbers to the right indicate the number of individuals who displayed a peak response at a specific time.
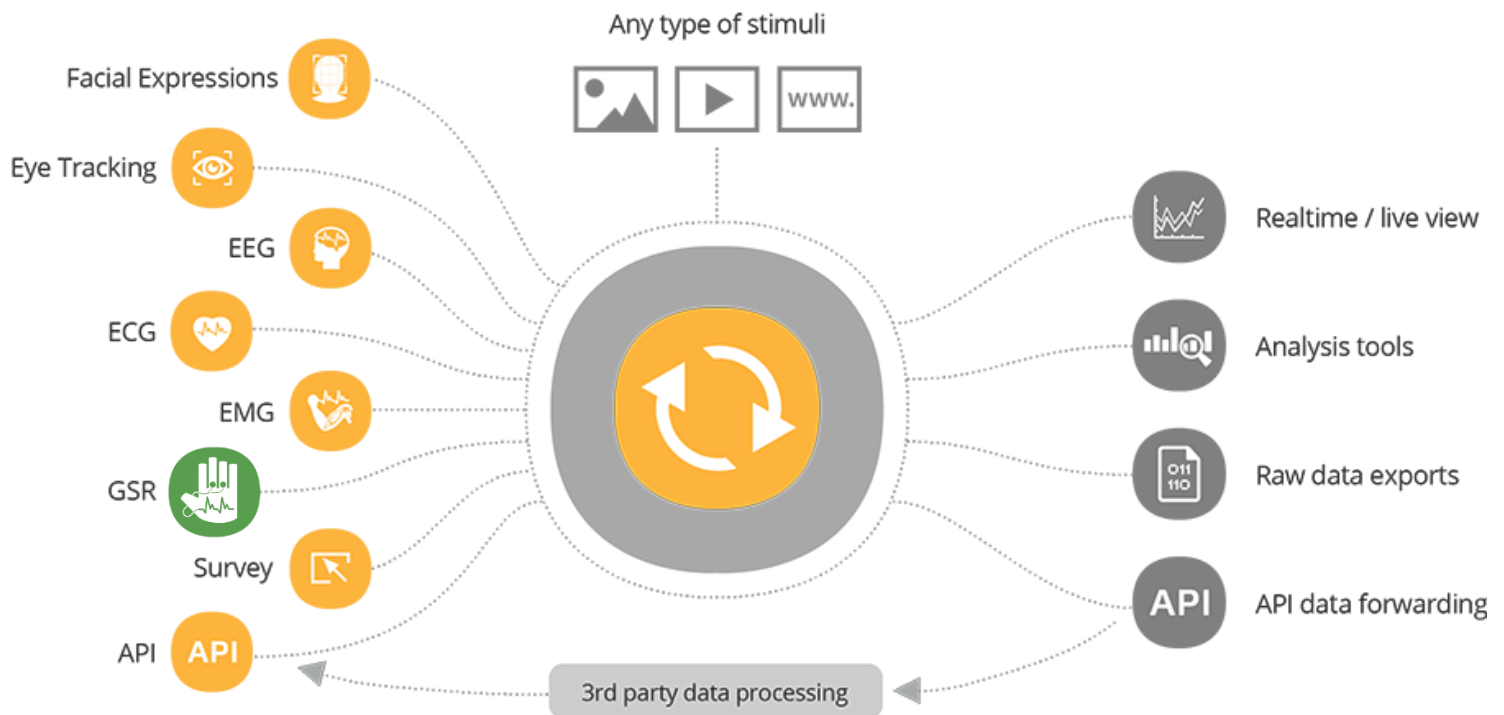
2. Multi-Shimmer Integration

This feature enables synchronization of a number of new data collection options such as GSR, EMG, and/or ECG signals, picked up simultaneously.

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Optionally combine GSR measurements with:

Eye Tracking, Facial Expression Recognition, EEG, ECG, EMG & Surveys

Standard Lab view with combination of sensors

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Shimmer3 GSR

Package contains:

- Hardshell box
- Bluetooth device
- Optical heart rate sensor (ear clip)
- 2 GSR sensors (cables + velcro straps + electrodes)
- Printed instruction / setup manual
- Hand strap

Technical Specifications	
Current Draw	60uA
Measurement Range	10k-4.7 MΩ (.2uS - 100uS) +/- 10% 22k-680KΩ (1.5-45uS) +/- 3%
Frequency Range	DC-15.9 Hz
Input Protection	RF/EMI filtering, Current limiting
Connections	Input 1, Input 2. All connections via Hospital-Grade 1.5 mm Touchproof IEC/EN 60601-1 DIN42-802 jacks
Dimensions	53 mm x 32 mm x 23 mm
Weight	32 g
Processing	MSP 430 microcontroller (8mHz, 16Bit)
Communication	Bluetooth - RN42, 802.15.4 radio - TI CC2420
Storage	Integrated 2GB microSD card slot
Battery	450mAh rechargeable Li-ion
Integrated 3 Axis Accel	Freescale MMA7361
Accel Range	+/- 1.5g-6g

Relevant links:

Shimmer's technology has been referenced in over 100 peer review journal articles. Due to the technology's highly flexible nature, published papers include a broad range of application areas, from wireless sensor network research papers to falls detection, validating Shimmer's technology for a number of uses and against leading gold standard equipment.

1. Event detection in an assisted living environment.
2. Real-time joint angle measurement using the Shimmer wireless sensor platform
3. **SHIMMER™ –** A Wireless Sensor Platform for Noninvasive Biomedical Research
4. SHIMMER and BioMOBIUS: A Health Research Platform
5. Automated Real-Time Atrial Fibrillation Detection on a Wearable Wireless Sensor Platform
6. A wireless framework for movement activity monitoring of sprinters
7. Research project: Shimmer Sensors for activity monitoring in post stroke upper limb rehabilitation
8. A WBAN for Human Movement Kinematics and ECG Measurements
9. Evaluation of Falls Risk in Community-Dwelling Older Adults Using Body-Worn Sensors

For more publications visit: https://delicious.com/ShimmerResearch

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