

## CORPORATE PRESENTATION

MIT • EmTech Spain •

*Nuubo provides a new proven and protected product platform for remote patient monitoring*



## **Wireless Dynamic ECG**

*Biomedical information anywhere and anytime*



## ■ NUUBO - HIGH GROWTH POTENTIAL WITH CONTROLLED RISKS



Based on a proven and protected *proprietary product platform and technology*

*IP protection (several international patent applications)  
CE mark approval (medical device)*

Offers solutions in the largest health and medicine segment: *Cardiology*

*Prevention and diagnosis  
Cardiac rehabilitation*

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Solutions involve both existing and new markets, reducing impact of adoption risk

*Medical device market  
Wireless health & wellness  
Platform (cloud-computing) and remote diagnosis services*

3-business model pillars with different weight depending on the market segment

*Initial sales (wireless medical device + SW Licensing)  
Recurring sales (biomedical e-textile)  
Recurring services (prevention, diagnosis, therapies & CR)*

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Already generating revenues with new-generation wearable medical single-lead ECG solution

Experienced team of 20+ industry experts in collaboration with top-tier research centers and universities in Europe

*Corporate and Scientific Advisory Board including cardiologists and market specialists*

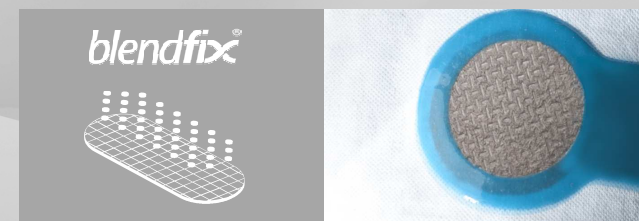
## ■ PROPRIETARY PRODUCT PLATFORM (*biomedical e-textile*)

### **BlendFix**<sup>®</sup> Sensor Electrode Technology

- Proprietary patent pending **biomedical e-textile technology** (*wearable sensor*)
- Cost-effective, continuous and **non-invasive**
- Excellent **ECG signal quality** and dynamic control
- Extremely **easy-to-use** (low physician involvement) with minimal impact on patient lifestyle
- Optimizes key resources (facilities and practitioners) and **decreases healthcare provider cost**



**nECG**<sup>™</sup> shirt L1 active





## ■ PROPRIETARY PRODUCT PLATFORM (*wireless sensor device*)



### nECG™ *minder L1*



#### Technical specifications

##### ECG

Channels: *single-lead (2 electrodes)*

Sampling rate: *250 sps*

Bandwidth: *0.05-100 Hz*

Class: *IIa*

Type: *CF*

##### Bluetooth® v2.0+EDR Class I (250 m)

Accelerometer *3-axis*

HR transmitter (*5.5 khz*)

Data storage *2GB*

*54 gr*

#### *Wearable bioelectronics system*

- Wireless dynamic ECG can be used in **real-time** and **holter** modes
- For both individuals and large numbers of patients (**multi-user**)
- **Long-duration:** recording can be extended up to a month with a 45-minute daily recharge
- ECG in environments with **high levels of physical activity**, such as sports
- Can be integrated in numerous **use cases** (i.e. outpatient, remote monitoring, etc.)



## ■ PROPRIETARY PRODUCT PLATFORM (*software analysis system*)

### *Intelligent information & ECG analysis*

- Highly automated analysis software
- Provides additional information: patient **physical activity** and **position/posture** information
- Proprietary annotated **dynamic ECG database** and artificial intelligence **algorithm**



nECG™ suite



## ■ CLINICALLY PROVEN. BACKED BY SEVERAL CLINICAL STUDIES

Building clinical evidence is a key component of our initiative to improve patient lifestyle with patient-friendly wearable wireless solutions



Letter to the Editor

### New generation dynamic, wireless and remote cardiac monitorization platform: A feasibility study

Leopoldo Perez de Isla <sup>a,\*</sup>, Vera Lennie <sup>a</sup>, Maribel Quezada <sup>a</sup>, Juan Guinea <sup>a</sup>, Cristina Arce <sup>a</sup>, Pilar Abad <sup>a</sup>,  
Adriana Saltijeral <sup>b</sup>, Nellys Carolina Campos <sup>a</sup>, Jacobo Crespo <sup>c</sup>, Borja González <sup>c</sup>,  
Agustín Macía <sup>b</sup>, Jose Zamorano <sup>d</sup>

<sup>a</sup> Unidad de Imagen Cardiológica, Hospital Carlos III, Madrid, Spain

<sup>b</sup> Cardiología, Hospital del Tajo, Aranjuez, Madrid, Spain

<sup>c</sup> Nuubo, Madrid, Spain

<sup>d</sup> Unidad de Imagen Cardiovascular, Hospital Clínico San Carlos, Madrid, Spain

*“Thus, Nuubo's dynamic ECG is able to obtain similar results to conventional treadmill system during exercise test and allows to obtain echocardiographic images but in an easier and more comfortable manner”*



### SAC 2011 – XLVI Congreso Andaluz de Cardiología

Sevilla, 12-14 de mayo de 2011

### E080. PROTOCOLO DE MONITORIZACIÓN CARDIACA REMOTA BASADA EN E-TEXTILES EN REHABILITACIÓN CARDIACA (RC) EN EL ÁREA HOSPITALARIA VIRGEN MACARENA (AHVM)

M. Álvarez Leiva, C. Ramos Durán, M. González Valdayo  
y R. Tallón Moreno

Hospital Universitario Virgen Macarena. Sevilla.

*“This new system simplifies the cumbersome traditional methods of connecting electrodes for the user. It also avoids these electrodes from being changed by sweating or sudden movement during exercise, reducing it to the simple act of wearing the garment.*

*The signal quality has been very good with an average (4, 46), the amplitude of the EKG record in (4.15) and noise signal was rarely detected, or having to check the device (1, 15)”*

## ■ MEDICAL DEVICE COMPANY & QUALITY MANAGEMENT SYSTEM

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Nuubo has received **CE Mark** approval for the commercial sale of its new-generation **wearable single-lead ECG solution**; this product complies with the *Medical Device Directive 93/42/EEC*

The company achieved **ISO 13485 (Medical Device) and ISO 9001 certifications**

The roadmap includes a multi-lead ECG solution, starting the *FDA 510(k) clearance process* by the beginning of 2012

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## ■ WHY CARDIO? LARGEST CAUSE OF DEATH AND HEALTHCARE COSTS

One in every four Americans suffer from cardiovascular disease, equaling 57 million people

*SRC: Bluzzele.com - N. Sandhyarani*

2.2 million US citizens are estimated to suffer from atrial fibrillation

*SRC: American Heart Association*

Over 6 million reimbursed codes related to Holter monitoring in the US in 2010

*SRC: Industry Expert*

Sudden cardiovascular death events occur most commonly during or just after physical exertion

*SRC: Circulation. American Heart Association*

Yearly cost of cardiovascular diseases in the US over \$316.000 million

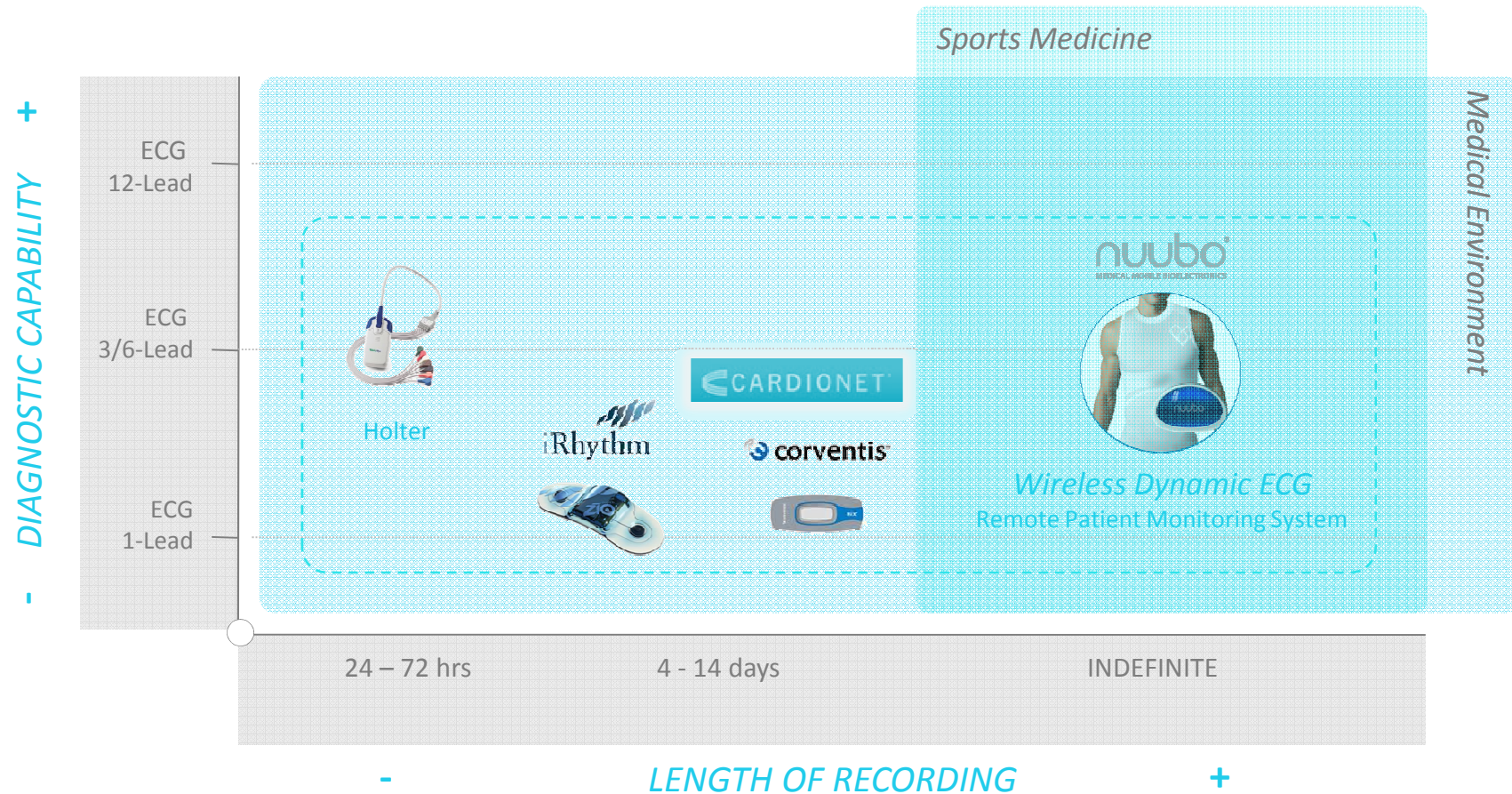
*SRC: American Heart Association*

6.2 million annual hospital discharges diagnosed with cardiovascular disease

*SRC: USA 2006. NHDS/NCHS and NHLBI*

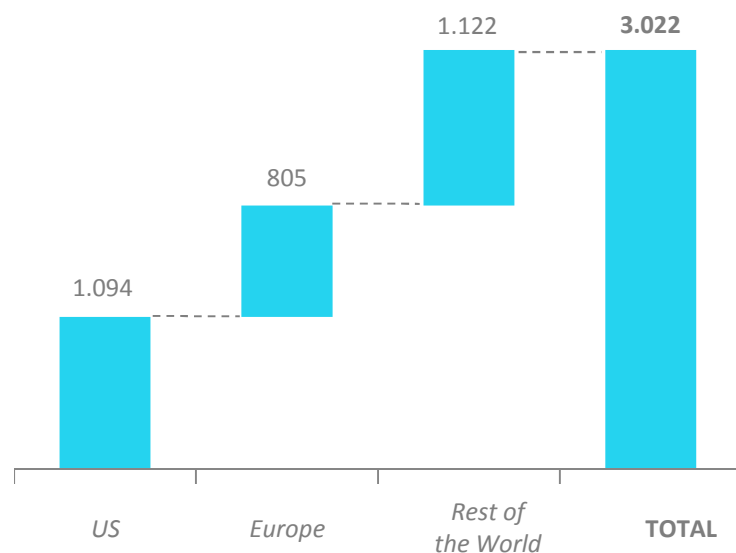
## ■ PROVIDING ACCESS TO EXTRAORDINARY MARKET OPPORTUNITIES

Current innovation (i.e.: *iRhythm*, *Corventis* ...) focused on extending recording length, but with limited diagnostic capability

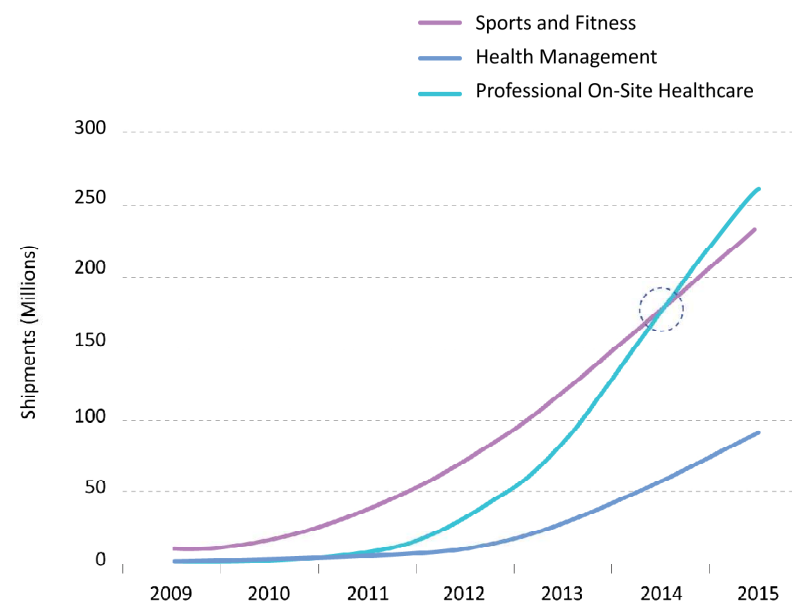


## ■ ANALYSTS ESTIMATE \$MULTI-BN CURRENT AND FUTURE MARKETS

**Existing** worldwide Holter device, event recorders and telemonitoring market 2010 (\$ million)



**Future** wearable wireless sensors market predicted to grow to more than 400 million devices annually by 2014



Source: Global Cardiac Monitoring Devices Market 2009-2015 (Axis Research Mind) | ABI Research. "Wearable Wireless Sensors". 2009

## ■ NUUBO's ANNUAL TOTAL ADDRESSABLE SIZE OF PRIORITY MARKETS



### **THERAPIES & REHABILITATION**

CARDIAC  
REHABILITATION

EUROPE (KEY 5 COUNTRIES) + USA

CR PHASE II: **\$51M**

CR PHASE III: **\$346M**

### **PREVENTION**

SPORTS MEDICINE  
INDIVIDUAL SPORTS

EUROPE (KEY 5 COUNTRIES) + USA

**\$694M**

### **DIAGNOSIS**

HOLTER & EVENT  
MONITORING

EUROPE (KEY 5 COUNTRIES) + USA

HOLTER REPLACEMENT: **\$484M**

SYNCOPE STUDY: **\$131M**

### **TOTAL**

EUROPE (KEY 5 COUNTRIES) + USA

**\$1.7bn**



Source: NUUBO ANALYSIS ESTIMATES A TOTAL ADDRESSABLE MARKET SIZE OF OVER \$1.7bn FOR KEY 5 EU COUNTRIES + USA



## ■ NUUBO's SOLUTIONS PORTFOLIO FOR PRIORITY MARKETS

3 Groups of solutions that address existing and new markets

	EXISTING MARKETS	NEW MARKETS
<b>PREVENTION</b> <i>(Single-lead ECG product)</i>	SPORTS MEDICINE	INDIVIDUAL SPORTS (consumer) LIFESTYLE & WELLNESS HIGH RISK PATIENTS
<b>DIAGNOSIS</b> <i>(Multi-lead ECG product)</i>	HOLTER & EVENT MONITORING Cardiac arrhythmias, AF	
<i>(Single-lead ECG product)</i>	SYNCOPE STUDY	
<b>THERAPIES &amp; REHABILITATION</b> <i>(Single-lead ECG product)</i>	CARDIAC REHABILITATION <i>(Phase II)</i>	CARDIAC REHABILITATION <i>(Phase III)</i>

with 3 revenue streams

<b>INITIAL SALE</b>	Wireless device + SW licensing	49%
<b>RECURRING SALES</b>	Biomedical e-textile (shirts)	50%
<b>RECURRING SERVICES</b>	Remote diagnosis services	1%

## ■ COMMERCIAL INITIATIVES VALIDATED BY PILOTS & CLINICAL TRIALS

### USP PALMAPLANAS



#### USP Palmaplanas monitors the players of Mallorca with a biomedical shirt.

Tags: [arrhythmia](#) , [shirts](#) , [cardiology](#) , [heart](#) , [mallorca](#) ,  
[Sudden Death](#) , [NUUBO](#) JUL 14 | DE

Unit Arrhythmias and syncope Palmaplanas USP has monitored in real time to players during training Mallorca today thanks to a shirt that captures biomedical electrocardiogram (ECG) through integrated textile electrodes in the garment.

This technology is the first time it is used to analyze the heart of the players in the first group of Mallorca. Throughout the preseason stage of submitting to these tests will be different team members.

Here the test photos with players of Mallorca:

### SANITAS - REAL MADRID

#### Press Releases

Controlled in real time the status of the heart while engaging in physical exercise

**Sanitas Medical Services-Real Madrid tested the effectiveness of a shirt that helps you detect and prevent heart disease**

- It allows to understand the behavior of the heart, so simple and noninvasive, situations and periods of time so far not possible
- Significantly complement all tests currently being made to minimize cases of sudden death in football
- Former first team players such as Zidane, Butragueño or de la Red have already tested it.

**Madrid, August 30, 2011**

When practicing an intense sporting activity, the athlete's heart behaves very differently than it does when it is at rest. It is therefore important to know and control your heart rate at the time of physical exercise. To this end, Sanitas Medical Services-Real Madrid are testing an innovative control technology for cardiac dubbed nECG Platform. The main novelty of this technology is the integration into a shirt of a new generation of textile sensors (BlendFix® Sensor Electrode Technology) developed and patented by the Spanish company Nuubo.

TV news clips describing Nuubo's initiatives:

[La Sexta Noticias](#)

[Canal Sur Noticias](#)

[IB3 Noticias](#)

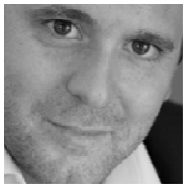
## ■ LEADERSHIP TEAM



### ***Agustín Macià, Founder & CTO***

15+ years of experience in entrepreneurship, executive management and development of innovative technology products in global markets. Co-founder of Sip25 (Internet company) and awarded as “*Young Entrepreneur in the Community of Madrid 1998*”. For 7 years acted as *Internet Product Manager* at ONO - the top cable carrier in Spain

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### ***Luis Sánchez***

#### ***Executive Partner & Administration Director and CFO***

ADAMS CFO for seven years, beginning his professional career in financial planning at MAPFRE

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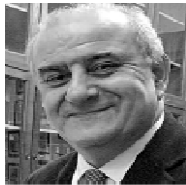


### ***Jacobo Crespo***

#### ***Executive Partner & Corporate Sales and Business Development Director***

Over a decade of experience in the tech-industry working for companies such as SYBARI Software (a Microsoft company) and RIM (BlackBerry) as *Sales & Business Development Manager*

## ■ SCIENTIFIC ADVISORY BOARD



***Josep Brugada, MD, PhD, FESC***

Cardiologist and Medical Director at Hospital Clinic (Barcelona, Spain)

Past President of the *European Heart Rhythm Association* (EHRA)

Deputy editor of the *European Heart Journal*

Discovered a cause of sudden death syndrome, called “*Brugada Syndrome*”



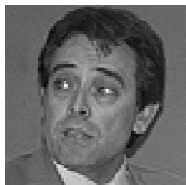
***Rafael Rodríguez de Sanabria, MD***

Cardiologist AVS/UPV

Associate Professor at *Polytechnic University of Valencia* (Spain) and Researcher at *i3BH* of UPV

Honorific president of *INVASCOR* (Valencia, Spain)

Member of *European Society of Cardiology*



***Javier Saíz, PhD***

Professor of Electronic Technology at *Polytechnic University of Valencia* (Spain)

Coordinator of *GBIO/i3BH* of UPV (Spain)

Director of the Masters Program for Biomedical Engineering of UPV (Spain)



## ■ COMPANY HIGHLIGHTS & MILESTONES



R&D and Product Development since 2008  
IP Protection (patent pending technology)  
Clinical Science (research, articles & trials)  
Product CE mark approval  
ISO13485 and ISO9001 certifications  
Corporate and Scientific Advisory Board  
Head Office (Madrid)  
Nuubo LAB (UPV-Valencia)  
Clinical LAB (HUVIM- Sevilla)  
Manufacturing facilities (Paiporta-Valencia)

### **Nuubo's Team (19)**

(1) Product Manager  
(1) Project Manager  
(3) Product Development Engineers  
(1) Senior Mechanical Engineer  
(4) Software Developers  
(1) Innovation Designer  
(3) Operations & Quality  
(3) Sales & Marketing  
(2) Administration

## HEAD OFFICE

### MADRID

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## CLINICAL LAB

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## NUUBO LABS

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## MANUFACTURING

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