



BioSig[™]
technologies

PURE EP[™] System

Identifying Cardiac Ablation Targets with Confidence

BioSig Technologies Profile

BioSig Technologies, Inc. has developed a next-generation Electrophysiology (EP) Information System - PURE EP™ System.

The PURE EP System acquires and displays high fidelity intracardiac (IC) & electrocardiogram (ECG) signals.

PURE EP assists electrophysiologists in making clinical decisions during cardiac catheter ablation in real-time by providing information that BioSig believes is not obtainable from any other equipment presently used in EP labs.



Photo: PURE EP proof of concept system during UCLA validation studies.

OTCQB:	BSGM
Public Since:	Oct. 10, 2014
Recent Price:	\$3.00
FD Shares (9/8/14):	23.3 million
Headquarters:	Los Angeles, CA

BioSig Investment Highlights

- **Proven Management Team & Board of Directors**
- **World-Class Medical Advisory Board**
- **EP Devices: \$3B Total Addressable Market, 12.1% CAGR**
- **Large Cardiac Arrhythmia Patient Population; Ablations Grow 10%+**
- **Increasing Demand for New EP Technologies to Address:**
 - **Complex Ablation Treatments**
 - **High Costs, with Higher Patient Throughput, Shorter Procedure Times**
 - **Unacceptably High Recurrence Rates (31% - 46%)**
- **High-Growth Sector Earns Innovation Premium, Aggressive M&A**

Proven Management Team & Board

Gregory D. Cash	President, CEO and Director; Pres: Argent International, NeuroTherm, Heartsine Tech, Vasomedical, Datascope, Eminent Tech; Mgmt: U.S. Surgical, Boston Scientific, Medtronic
Kenneth L. Londoner, MBA	Co-Founder, Executive Chairman / Director; Endicott Management Partners, J & W Seligman & Co; Director: Alliqua, chatAND, Freeline
Steve Chaussy, CPA	CFO; Liberski Inc, Anna & Co, Penske Automotive, Ford Hogg and Cobbe
Seth H. Z. Fischer	Board Member; Current CEO & Dir: Vivus, Inc; Former WW Chairman: J&J, Cardiovascular
Roy T. Tanaka	Board Member; Former Pres: J&J; Dir: TomoTherapy, Volcano Corp, Advanced Cardiac Therapeutics, VytronUS, Coherex Medical
Asher Holzer, PhD	Board Member; Founder: InspireMD; Mgr: CARTO System, Biosense
Jonathan Steinhouse	Board Member; VP Sales: Oracle, Sandlot Solutions, Orange MZI Healthcare currently
Patrick J. Gallagher	Board Member; Mg Dir: Laidlaw & Co.; Kinex Pharmaceuticals; Director: Cingulate Therapeutics, BDR Research Group, GC Capital Partners, Kidder Peabody



World Class Medical Advisory Board

Leading authorities in electrophysiology

Andrea Natale, MD, Chairman	Executive Medical Director, Texas Cardiac Arrhythmia Institute, St. David's Medical Center
Kalyanam Shivkumar, MD, PhD	Director, UCLA Cardiac Arrhythmia Center; Professor of Medicine & Radiology
Mauricio Arruda, MD	Director, Clinical Electrophysiology & Pacing, University Hospitals Case Medical Center
Vivek Reddy, MD	Director, Cardiac Arrhythmia Service and a Helmsley Trust Professor of Medicine, Mount Sinai Medical Center in New York
David E. Haines, MD	Director, Heart Rhythm Center, Electrophysiology Services, William Beaumont Hospital
Luigi Di Biase, MD PhD, FHRS	Senior Researcher at Texas Cardiac Arrhythmia Institute; Associate Professor, Albert Einstein College of Medicine, Adjunct Professor at the UT Austin

THE UNIVERSITY OF
TEXAS
AT AUSTIN

Beaumont
HOSPITALS

 **University Hospitals**
Case Medical Center

StDavid's | **MEDICAL CENTER**

 **Mount
Sinai**

Ucla

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Cardiac Arrhythmias

1 in 18 (14.4M) Americans Suffer

ATRIAL FIBRILLATION (AF)

- Increases individual's risk of **Stroke** 4- to 5-fold* - **4th Leading Cause of Death in the US**
- Most Common Arrhythmia:
U.S. = **2.7M** 2010; **5.6M** by 2050*
(7M - 12M Worldwide)
- **≈600,000** hospitalizations/year*
- Direct cost = **\$6B** annually;
adding other indirect costs brings
AF total cost to **\$26B***

VENTRICULAR TACHYCARDIA

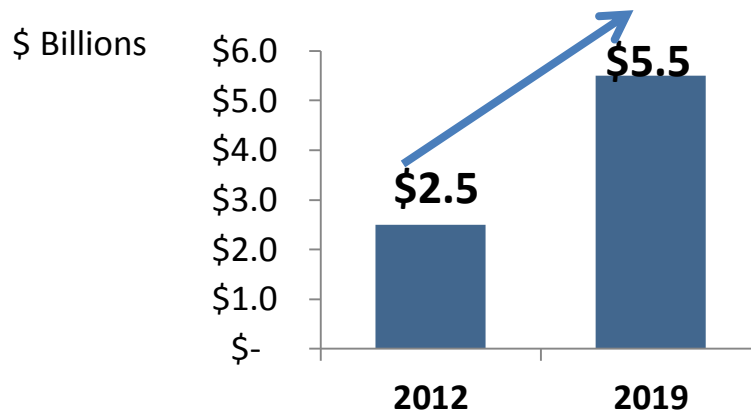
- Ventricular tachycardia (VT) and ventricular fibrillation (VF) are rapidly fatal if not reversed
- Ventricular arrhythmias account for **>350,000** Sudden Cardiac Deaths annually*

* American Heart Association data

Cardiac EP: Large & Growing Market

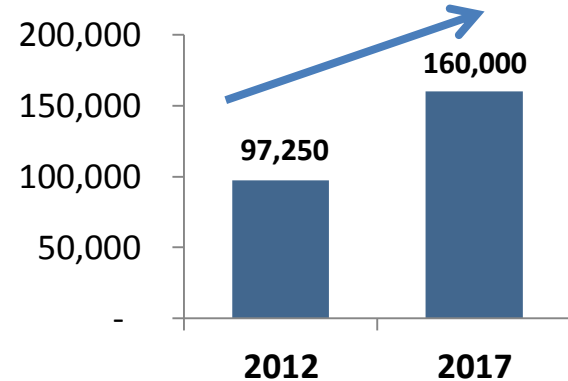
EP Devices: 12.1% CAGR is One of the Fastest Growing Cardio Medical Device Segments¹

Current EP Market is ~\$3B worldwide



U.S. AF and VT Catheter Ablations²

Forecasted to grow 10.5% annually through 2017
(VT 13.9% CAGR and AF 10.1% CAGR)



- EP Labs: Estimated 4,000 WW; 2,800 in the U.S.
- In 2012: 260,000 U.S. catheter ablation procedures; 600,000 WW
- Average ablation procedure price (USD): \$6,000 - \$15,000

Sources: 1. <http://www.transparencymarketresearch.com/electrophysiology-ep-devices-market.html#src=whatech> 2. HRI 2013 "Global Opportunities in Medical Devices & Diagnostics" report; triangulation of multiple sources; *AF includes left atrial tachycardia, left WPW, left atrial flutter.

BioSig's Technology Addresses Critical Issues

- **High ablation recurrence rates:** 31% for paroxysmal AF; 46% for persistent/permanent AF
- **Long procedure times:** from 2-8 hours depending on case, clinician experience
- **Outdated technology:** EP recording systems use core technology from the 1990s
 - **Strong market demand** as anatomical-based procedures have limited success
 - **Artifacts and noise** generated by other EP lab equipment compromise signal quality; current noise reduction solutions alter acquired signal morphology
- **Anti-arrhythmic drug therapies have limited effectiveness,** driving demand for catheter ablation



PURE EP System Value Proposition



Electrograms & ECG signals – important for diagnoses and treatments



Signals are degraded by environmental noise and signal processing



Inadequate signal quality leads to poorer outcomes, clinical and economic inefficiencies

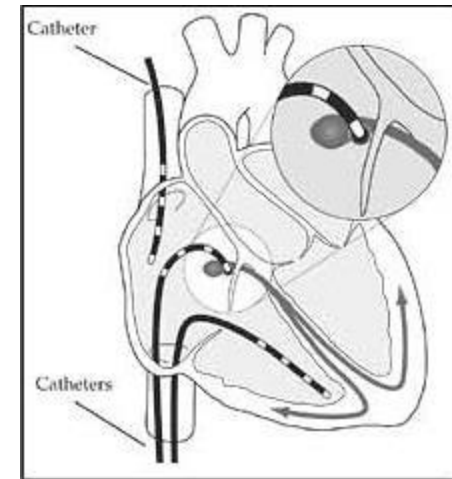


PURE EP System preserves morphology of ECG & IC signals and provides Confidence Indexes to ensure optimal clinical decision making

Why are EP Signals Critical?

Quality Cardiac Signal Recordings ⇒ Better Clinical Decision Making

- Strong demand as anatomical-based ablation procedures have limited success
- Today's lack of reliable, real-time data and operator guidance drive high re-do rates in complex arrhythmia ablations
- Universal problem of noise in all EP labs leads to inefficient procedures
- Certain arrhythmia ablation procedures currently performed by only limited number of centers due to complexities



During EP procedures, catheters are placed on cardiac tissue to record signals and apply energy to destroy abnormal electrical pathways

PURE EP System

Only system dedicated to improving cardiac signal recordings and providing Confidence Indexes - fundamental for improved diagnoses and treatments of cardiac arrhythmias

ACCURATE ECG & IC SIGNALS

Preserves morphology of the patient's cardiac signals

REAL-TIME ANALYSIS

Visualize crucial information in real-time

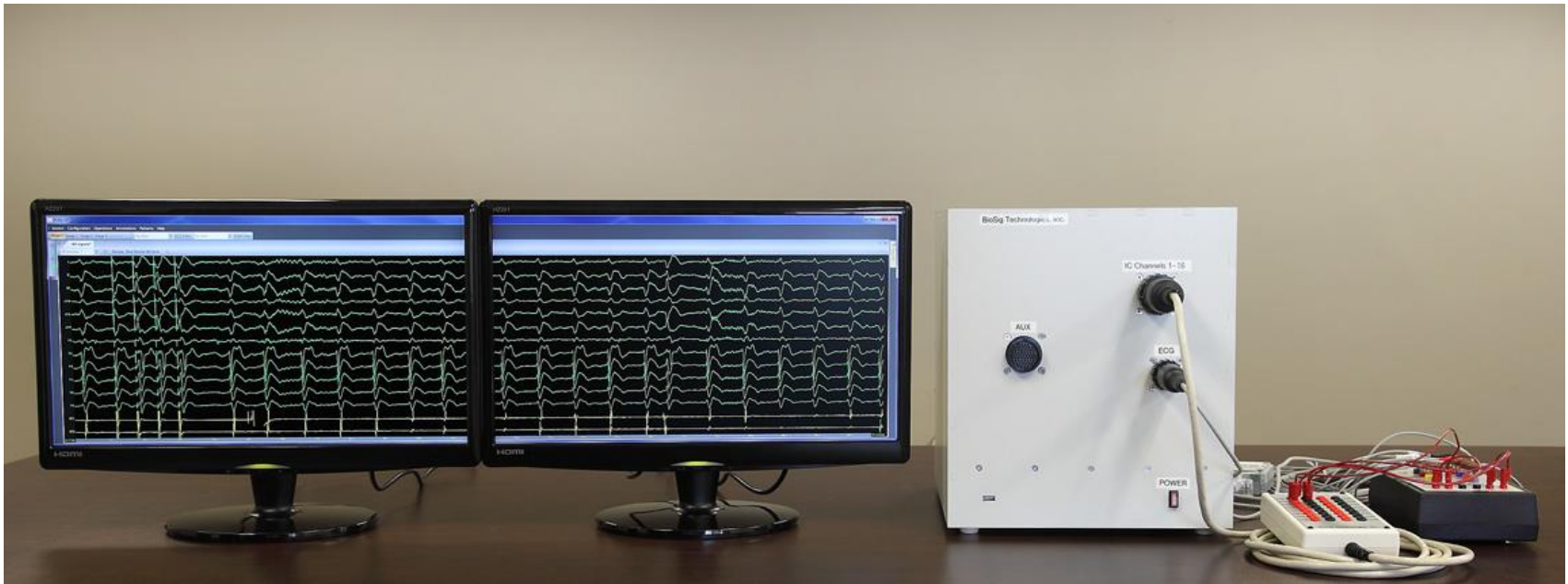
OPTIMIZE PROCEDURE TIME

Improve procedure efficiency by eliminating need for data validation using PURE EP's Confidence Indexes (CI)

CONFIDENT DECISION MAKING

Confidence Indexes provide critical information to assist in clinical decision making for improved catheter ablation outcomes

Current PURE EP System Prototype



PURE EP System Prototype connected to an ECG/IC Simulator

Validation of PURE EP System



- Testing of the PURE EP System is underway - EP & Animal labs at UCLA
- BioSig is collaborating with the leading Cardiac Centers:
 - Texas Cardiac Arrhythmia Institute
 - UCLA Cardiac Arrhythmia Center
 - U.H. Case Medical Center in Cleveland
 - William Beaumont Hospital in Michigan
 - Mount Sinai Medical Center in NY
 - Mayo Clinic in Minnesota
- BioSig has developed ECG/IC simulator to objectively measure/compare PURE EP's performance vs. existing EP systems

EP Competitive Landscape

EP Market: Intense Competition & Rapid Technological Advances

- 4 large companies share the majority of EP recording market share
- They produce the following EP recording systems @~\$250,000/unit:
 - Bard's LabSystem PRO EP Recording System, originally designed in the late 1980s; acquired by Boston Scientific in 2013
 - Siemens developed the Axiom Sensis XP in 2002
 - GE's CardioLab Recording System developed early '90s by Prucka Engineering; acquired by GE 1999
 - St. Jude Medical's EP-WorkMate Recording System was acquired from EP MedSystems in 2008, received FDA approval in 2003

EP Sector M&A Activity

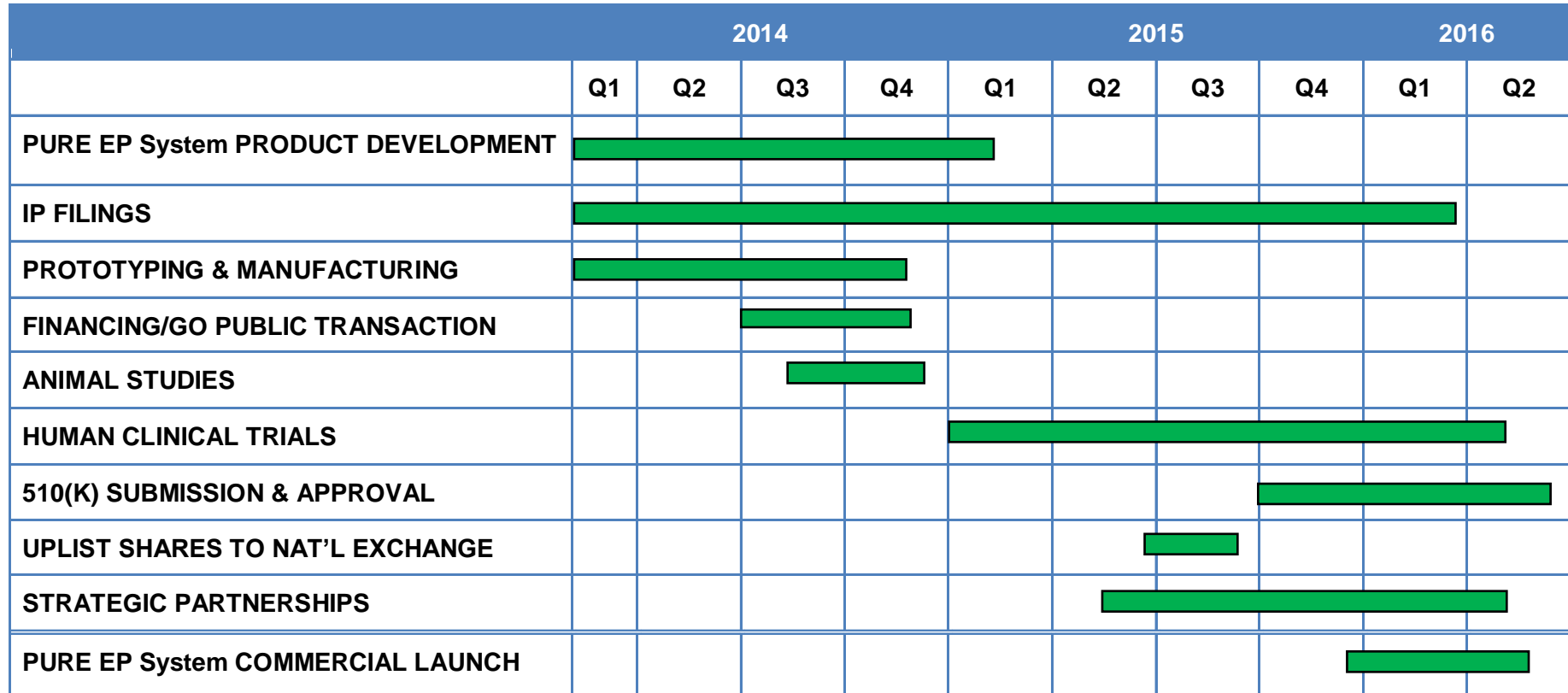
Company	Proof of Concept	Prototype	Clinical Data	CE Mark	FDA	Sales	Acquirer/ Investor	Valuation
Abbott/Topera (Closing Q4-14)	●	●	●	●	●		Abbott	\$250M+ milestone \$\$ Q4-14 Deal
Bard EP Division of CR Bard	●	●	●	●	●	●	Boston Scientific	\$275M 2013 Deal
Rhythmia Medical Formed 2004	●	●	●				Boston Scientific	\$265M 2012 Deal
Ablation Frontiers Formed 2004	●	●	●	●			Medtronic	\$225M+ 2009 Deal
EP Medsystems Formed 1993	●	●	●		●	●	St. Jude	\$92.1M 2008 Deal
Cryocath Formed 1995	●	●		●	●	●	Medtronic	\$380M 2008 Deal
Endocardial Solutions Formed 1992	●	●	●				St. Jude	\$272M 2005 Deal
Prucka Engineering Formed 1988	●	●	●		●	●	GE	Undisclosed 1999
BioSig Technologies Formed 2011	●	●	●					

BioSig's Key 12-Month Milestones

- **Continue Animal Studies at UCLA's Cardiac Arrhythmia Center**
- **Commence In-Human Clinical Studies**
- **Submit FDA 510(k) Application Q4-15: Typical Approval is ~5-9 Months**
- **Continue to Build Intellectual Property Portfolio**
- **Raise Growth Capital**
- **Uplist to National Exchange in 2015**
- **Prepare for Commercialization, transition to Sales & Marketing Org**

Milestones & Timelines

PURE EP System Milestones & Timelines



Financing History

Founders: 2009-2010

<u>Friends & Family:</u>	<u>Mar 2011</u>	<u>\$150K</u>	<u>\$7M PMV*</u>
<u>Series A Preferred:</u>	<u>June 2011</u>	<u>\$1M</u>	<u>\$15M PMV</u>
<u>Series B Preferred:</u>	<u>April 2012</u>	<u>\$1M</u>	<u>\$17.5M PMV</u>
<u>Series C Preferred:</u>	<u>July 2013</u>	<u>\$2.78M</u>	<u>\$20M PMV</u>
<u>Common:</u>	<u>April 2014</u>	<u>\$1.37M</u>	<u>\$36 - \$38M PMV</u>
<u>Common:</u>	<u>Sept 2014</u>	<u>\$1M</u>	<u>\$51M PMV</u>

- No Debt
- 27% Fully Diluted D&O Ownership
- Consistent Management & Board Participation in Financings

* PMV = Pre-Money Valuation

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Contact BioSig

Gregory Cash

President & Chief Executive Officer

(612) 309-4747

gcash@biosigtech.com

Ken Londoner

Co-Founder, Executive Chairman

(203) 644-5200

klondoner@biosigtech.com

Investor Relations

Jody Cain, Sr. VP, Financial Profiles

11601 Wilshire Blvd. Suite 1920

Los Angeles, CA 90025

310.478.2700

jcain@finprofiles.com

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