

MOBILE HEALTHCARE

The Tech Behind the Markets

AUGUST 2013

STUDY NUMBER:
MP102-2-13

© Copyright Semico Research, 2013. All rights reserved.

Reproduction in whole or part is prohibited without the express written permission of Semico.

The contents of this report represent the interpretation and analysis of statistics and information that is generally available to the public or released by responsible agencies or individuals, but is not guaranteed as to its accuracy or completeness. The reader acknowledges that they use this information at their own risk.

Table of Contents

TABLE OF CONTENTS	I
LIST OF FIGURES & TABLES	III
EXECUTIVE OVERVIEW	6
METHODOLOGY	7
OVERVIEW	8
End-Market Summary	8
Wearable electronics	9
KEY PLAYERS	10
9Solutions IPCS	10
Analog Devices.....	11
Bosch.....	13
Cactus Semiconductor.....	13
Danfoss PolyPower A/S.....	14
Freescale.....	15
InvenSense.....	17
Maxim Integrated Products.....	18
MEAS Switzerland	18
Plessey Semiconductor	19
Qualcomm	21
STMicroelectronics.....	22
Texas Instruments	24

STANDARDS AND ALLIANCES	25
AdvaMed	25
ZigBee Alliance	26
Continua Health Alliance.....	26
ANT+ Alliance	27
TECHNOLOGY ANALYSIS AND ROADMAP	28
Sensors.....	28
Accelerometer.....	30
Ambient Light	31
Compass	31
Global Positioning System (GPS)	32
Gyroscope.....	32
Magnetometer.....	35
Barometer / Pressure.....	35
Proximity	36
Microphone	37
Inclinometer.....	37
Temperature.....	37
Sensor Fusion.....	37
Wireless Technology.....	38
ZigBee	39
Bluetooth	40
NFC	42
Stretchy Electronics.....	42
Enhanced Motion Tracking	43
Omek	43
Movea.....	44
Power Management.....	45
TOTAL END-USE MARKET OVERVIEW & FORECAST	46

List of Figures & Tables

Figure 1: End-Market Mobile Unit Growth	6
Figure 2: Semico Forecasting Methodology	7
Figure 3: 9Solutions IPCS System Diagram	10
Figure 4: Activity Monitor Block Diagram from Analog Devices	11
Figure 5: Blood Pressure Block Diagram from Analog Devices	12
Figure 6: Pulse Oximetry Block Diagram from Analog Devices.....	12
Figure 7: Cactus Semiconductor Medical Device	13
Figure 8: Force Density vs. Strain for DEAP	14
Figure 9: Freescale Pulse Oximeter Development Kit	15
Figure 10: Freescale Medical Connectivity Library.....	16
Figure 11: InvenSense MotionTracker	17
Figure 12: Maxim HR Monitor	18
Figure 13: Basic EPIC Block Diagram	19
Figure 14: Diagrammatic Example of ECG Measurement Using Wrist-Mounted EPIC	19
Figure 15: Diagrammatic Example of User Holding Smartphone with Sensors	20
Figure 16: Non-Contact ECG Measurement Using EPIC.....	20
Figure 17: ST Healthcare Markets.....	22
Figure 18: Typical ST Healthcare Application Diagram.....	22

Figure 19: STM8L15x Consumption Values	23
Figure 20: TI Pulse Oximetry Block Diagram.....	24
Figure 21: ZigBee Alliance Interoperability	26
Figure 22: Integrated Approach of Interoperable Device by ST	27
Figure 23: Personal Body Network Using Sensors	28
Table 1: MAP Model MEMS Sensors ASP	29
Figure 24: Five Motion Senses of MEMS Inertial Sensors	30
Figure 25: Semico MEMS CAGR & Unit Forecast 2013 / 2017	30
Figure 26: 3-Axis Accelerometer Measurement on iPhone.....	31
Figure 27: Xtrinsic FX0S8700CQ 6-Axis Sensor Block Diagram.....	32
Figure 28: Epson Gyro Build	33
Figure 29: 6-Axis Sensor Consumer Use Example.....	34
Figure 31: Magnetic Field Distortions from Hard and Soft Iron	35
Figure 32: 3-Axis Magnetometer	35
Figure 33: MPL3115A2 Pressure Sensor Block Diagram	36
Figure 34: Kionix Hardware and Software Sensor Fusion Solutions	38
Figure 36: Data Rates Comparison	39
Figure 37: Bluetooth Enabled System	40
Figure 38: ST Bluetooth Features and Benefits.....	41
Figure 39: Bluetooth Medical Application	41

Table 2: Differences Between RFID and NFC	42
Figure 40: Flexible Electronic from MC10.....	43
Figure 41: Flexible Electronic Stretchable to 200% of Normal Size.....	43
Figure 42: Omek Beckon View Tool	43
Figure 43: Movea Table of SmartMotion Elements	44
Figure 44: K50 Modes of Power Consumption	45
Figure 45: Fitness and Wellness Total Revenue and Percent Change	46
Table 3: Total Fitness and Mobile Wellness Forecast	46