Smart Clothing Market Analysis

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Market Analysis Key Insights

The power of smart clothing can be best realized when companies engage both consumers for personal data insights and big data analysis for commercial application.
Current Wearables Market Dominated by Fitness Trackers

72.1 million wearable devices sold in 2015

Source: IDC Worldwide Quarterly Wearable Device Tracker, June 18, 2015
Wearables are Growing, but Smart Garment Adoption is Slow

14X more wearables will be sold in 2018 than in 2013

Source: Gartner

Forecast of Worldwide Wearable Device Sales

Less than 1% of the wearables marketshare

Source: Gartner
Smart Clothing could be the Next Wearable Market Leader

Clothes will always outsell phones.

Dr. Michael Burrows, DuPont

2015 Global Market Size

$1.2 trillion garments

$399B smartphones

Predicted 2019 Global Market Size

$2.2 trillion garments

$520B smartphones

Sources: “Global Clothing and Footwear Retailing, 2014-2019; Market Dynamics, Retail Trends and Competitive Landscape”, U.S. Joint Economic Committee
How can Smart Clothing Move from Today to Tomorrow?

- Fashion
- Athletics
- Military
- Healthcare
- Infotainment
Pro teams could save $20B of revenue loss by using predictive data to prevent injuries.
Golden State Warriors practice in this startup's high tech fitness gear
Application for Athletic Smart Clothing

**PERSONAL**
- Injury prevention
- Athlete peak performance optimization
- Oxygen monitoring
- Dehydration
- Cramping
- Collision measurement

**BIG DATA ANALYSIS**

**TEAM**
- Team metrics: comparison applications
- Predictive injury analysis
- Predictive performance analysis

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Sutardja Center for Entrepreneurship & Technology
Berkeley Engineering

Berkeley
UNIVERSITY OF CALIFORNIA
Market Size for Athletic Smart Clothing

Global Athletic Clothing Revenue in $B

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<tr>
<th>Year</th>
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<th>APAC</th>
<th>EMEA</th>
<th>NA</th>
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<tr>
<td>2020</td>
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42% increase since 2010

U.S. Smart Clothing Revenue

48% increase in US smart clothing sales since 2013

Source: Euromonitor, Morgan Stanley Research Estimates
Biometric data and remote diagnostic ability could save thousands of lives of U.S. troops per year and $170B of long-term care savings.
Application for Military/Industrial Smart Clothing

**PERSONAL**
- Health monitoring
- Ballistic protection
- Wound detection
- CBRNE agent detection
- Power generation
- Assisting uniform

**BIG DATA ANALYSIS**

**TROOPS**
- CBRNE agent detection
- Communication & networking capabilities
- Battlefield awareness

Source: https://www.sbir.gov/sbirsearch/detail/372783
Market Size for Military/Industrial Smart Clothing

Spending on military textiles and clothing in the US is expected to be **$1.6 billion** in 2015.

The Global Smart Textiles Market for Military will grow at a CAGR of **10.4%** during 2014-2019.

Projected Military Spending on Wearables

Wearable technology use for military is expected to be a **$500M** market in 2018.

Sources: Transparency Market Research Advanced Textile Source Global Industry Analysts TechNavio
Insights from big data analysis could save $1.7B year through injury avoidance.
Smart Clothing for the Healthcare Worker
Application for Healthcare Smart Clothing

**PERSONAL**
- Real-time posture
- Situational alerts
- Customized training
- Imminent Injury alert

**BIG DATA ANALYSIS**

**STAFF**
- Alerts: Call for additional help
- Situational analytics
- Hospital-wide training recommendation
- Cost analysis of improved facilities

Source: [https://www.sbir.gov/sbirsearch/detail/372783](https://www.sbir.gov/sbirsearch/detail/372783)
Smart Clothing for Healthcare Worker

**Use Case:** Smart clothing could prevent injuries for healthcare workers, where the business cost of an injury averages **$22,440**.

**Workplace Injuries per 10,000 employees**

- Hospitals
- Construction
- Manufacturing
- Private Industry
- Business

**Causes of Missed Work for Hospital Workers**

- Slips, trips, and falls: 25%
- Overexertion: 48%
- Contact with objects: 13%
- Violence: 9%
- Exposure: 4%

*More than 50% of injuries are preventable*

Market Size for Healthcare Smart Clothing

Total Addressable Cost

- 4 Million Nursing Staff (US only)
- 2 Million Nurses (EU)

$1.7B

SINGLE INCIDENT COST

MEDICAL $12K
INDEMNITY $10K
LOST TIME $22K
REPLACEMENT $27K

Wearable Technology Vendor Landscape and Market Applications

Healthcare & Medical
- **Smart clothing**
  - Biometric monitors
  - Chemical monitors
  - Hearing aids
  - Drug monitors

Industrial & Military
- **Smart clothing**
- Wrist displays
- Heads-up displays
- Exoskeleton

Fitness & Wellness
- **Smart clothing**
  - Activity monitors
  - Wrist displays
  - Heads-up displays

Infotainment
- **Smart glasses**
- Wrist displays
- Heads-up displays
- Headsets
Value Chain for Big Data in Smart Clothing

**Requirements**
- Sensors
- e-Textiles
- Data collection
- Standards/security
- Personal records

**Smart Clothing**
- Personalized
- Situational
- Predictive
- Analytics

**Big Data**
- Trend Analysis
- Pattern Recognition
- Simulation
- Cost/Benefit

**Personal Value**
- Summaries
- Feedback
- Exercises
- Guidelines
- Injury Prevention

**Business Value**
- Scheduling
- Training
- Situational Alerts
- Injury Prediction
- Injury Prevention
- Fatigue awareness
- Risk Reduction
Partners drive investment and application use cases.

Competitors are pushing suppliers in tech innovation.
Barriers to Smart Clothing Adoption and Growth

Cultural Challenges

Expense: 14% say that wearable tech is too expensive
Privacy: 52% say that privacy is the biggest concern for wearables
Style: 53% say that want wearable tech to be more stylish
Utility: 51% say wearables lack compelling use cases

Technical Challenges

Portability: Sensor size, energy source, and chargeability
Sensors: Recognizing user action and environment data
Connectivity: Uploading data
Privacy: Securing data
Standards: Normalizing data
Analysis: Mining data for insights

Sources: Microsoft, Areteon, Nielsen
Predictions for Smart Clothing Market Success

- Big data is needed to move from personal to commercial use cases
- Commercial application is needed to improve the value proposition
- Companies will start to enter the big data platform market

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<th>Year</th>
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<tr>
<td>2014</td>
<td>RECORD: Log personal expr to cloud memory</td>
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<tr>
<td>2015</td>
<td>NUDGE: Responsive coaching leads to better behavior</td>
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<tr>
<td>2016</td>
<td>SUPPORT: Data-streamed information to manage outcomes</td>
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<tr>
<td>2017</td>
<td>MIRROR: Data monitoring and predictive analysis to reflect one’s well being</td>
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<tr>
<td>2018</td>
<td>ALIGN: Biometrically attuned systems personalized to the surroundings</td>
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Source: Areteon