Summary of Appian Medical Opportunity

**Disruptive Technology**
- Software/algorithm validated to accurately diagnose (93%) sleep apnea via overnight recordings of snoring vs. PSG.

**Disruptive Business Model**
- FDA 510k OTC clearance for software as definitive rule in/rule out diagnostic test
- CMS designation of software as a home sleep study (HST) device so that therapy will be reimbursed for Appian diagnosed OSA patients

**Successful, Seasoned Team**
- Multiple exits generating 4x to 80x returns for investors
- Raised over $125M in VC and public company funding
- 3rd OSA diagnostic technology venture

**Billion Dollar Exit**
- $4.5B sleep study market (USA 2014) growing to $8.5B (Worldwide 2018).
The Disruptive Evolution of mHealth

Stage 1
Consumer Adoption

Activity tracking for health & wellness

Stage 2
MD Adoption

Self diagnosis & disease monitoring

Stage 3
Payer Adoption

Neural networks & data mining

Outcomes

Quantification of Self

Pro-Active Disease Management

Disease Risk Prediction

Consumer Directed Diagnostics
Vision: Big Data Empowered By Consumer Directed Diagnostics

*Consumer directed diagnostics* empower patients to detect disease risks earlier and seek physician counsel & treatment.

OSA is the 1st focal point:
- Touches many other diseases
- Significant unmet need
- OSA diagnostic algorithm in development

OSA has significant links to >25 diseases

CO-MORBID % WITH OSA
- Afib: 80%
- Hypertension: 33%
- CHF: 50%
- Stroke: 60%
- Diabetes: 50%
- Obesity: 90%
- Erectile Dysfunction: 90%
- Depression: 50%

CDD Data Pool Could Touch ≥100 Million People in USA

Potential to aggregate data from multiple diseases
*OSA diagnostic app offers universal API links to other hardware & software*
Dilemma: Obstructive Sleep Apnea (OSA) Epidemic

- 100 million globally suffer from OSA (25 million in USA)

- Global trend: *The older and fatter the population gets, the greater the prevalence of OSA*

- 85% remain undiagnosed

- Untreated OSA causes or worsens other chronic, costly disorders: high blood pressure, diabetes

- OSA results from repeated airway collapse during sleep – can occur hundreds of time a night, reducing oxygen circulation in the blood
Competition: Inefficient Detection of Therapy Candidates

- Need referral
- Uncomfortable testing environment
- Lengthy wait lists at some labs
- $1,500-$3,000 per night
- 25% test completion failure rates
- Up to 40% false negative results documented in studies
- Not suitable for mass screening

- Require physician prescription
- Most are uncomfortable
- Often need additional training
- Up to $750 per night
- Optimum detection requires multiple night testing
- Completion rates unreliable

Need: Low Cost + In Home + Comfortable + Accurate
What is SnoreSounds?

• A unique algorithm that diagnoses OSA from sound analysis

• Uses proprietary High Order Statistical (HOS) algorithms for acoustic analysis of snore characteristics caused by airway collapse.

• Software platform can be delivered by various means: smartphone apps, wearable sensors, medical or consumer devices
SnoreSounds Customer Value Proposition & Benefits

- SnoreSounds has no wires, no cuffs, no straps or head attachments.
- SnoreSounds preserves the natural sleep environment – no discomfort or disturbance
- Simple operation needs no special instruction - place the phone at bedside and activate the app.
SnoreSounds: Advancing the Diagnosis of OSA

The comfort, convenience & cost advantages of SnoreSounds align with payer-driven momentum to increase consumer access to OSA testing.

1970
Advent of Polysomnography (PSG)
- 1st sleep Lab at Stanford University
- Only approved method of diagnosing OSA
- $1500 avg. cost

2008 - 2009
Validation of Home Sleep Tests (HST)
- Medicare (CMS) Nat’l Coverage Decisions
- Equivalent to PSG @ 50% of cost
- $750 avg. cost

2014
Payers are actively steering patients away from PSG to HST

2016
Introduction of App Sleep Test (AST)
- SnoreSounds validation as diagnostic device
- Equivalent to PSG @ 2% of cost
- $50 avg. cost
The cost advantages of SnoreSounds will be a significant inducement for payers to continue to steer patients toward consumer directed diagnosis.

<table>
<thead>
<tr>
<th>Diagnostic + Treatment Pathway Step</th>
<th>PSG</th>
<th>HST</th>
<th>SnoreSounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCP visit – suspects OSA</td>
<td>$ 85</td>
<td>$ 85</td>
<td>--</td>
</tr>
<tr>
<td>Sleep Medicine Specialist referral</td>
<td>$ 125</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Sleep Test</td>
<td>$ 1500</td>
<td>$ 750</td>
<td>$ 50</td>
</tr>
<tr>
<td>Titration Test</td>
<td>$1500</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Post Diagnosis Physician Visit (Sleep Med)</td>
<td>$ 125</td>
<td>$ 85</td>
<td>$ 85 (PCP)</td>
</tr>
<tr>
<td>Post Diagnosis Physician Visit (PCP)</td>
<td>$ 85</td>
<td>$ 85</td>
<td>$ 85 (PCP)</td>
</tr>
<tr>
<td>Purchase Therapy (1 year)</td>
<td>$ 425</td>
<td>$ 650</td>
<td>$ 650 (APAP)</td>
</tr>
<tr>
<td>Follow – up titration</td>
<td>$1500</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL Diagnosis + Treatment Cost</strong></td>
<td>$5260</td>
<td>$1570</td>
<td>$ 785</td>
</tr>
</tbody>
</table>
SnoreSounds Regulatory & Medicare/Payer Pathway

A step-wise approach will be required to achieve the ultimate goal of a FDA OTC approval for SnoreSounds as a consumer diagnostic app.

<table>
<thead>
<tr>
<th>Step</th>
<th>Indication/Outcome</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>510(k) #1</td>
<td>Rx for diagnosis of OSA using technology in Lab</td>
<td>Validation of algorithm accuracy vs. lab PSG</td>
</tr>
<tr>
<td>510(k) #2</td>
<td>Rx for diagnosis of OSA using smartphone technology in lab (30 day expedited review)</td>
<td>Equivalence of algorithm on smartphone to lab recording method</td>
</tr>
<tr>
<td>510(k) #3 a</td>
<td>Rx for diagnosis of OSA using smartphone in home setting</td>
<td>Accuracy of algorithm vs. standard home sleep tests</td>
</tr>
<tr>
<td>510(k) #3 b</td>
<td>Rx to OTC conversion for consumer diagnosis in home</td>
<td>Consumer ease-of-use &amp; outcomes study</td>
</tr>
<tr>
<td>CMS Review</td>
<td>Medical policy approval of smartphone algorithm diagnosis as equivalent to approved home sleep tests</td>
<td>• Enables reimbursement of therapy based on diagnosis with SnoreSounds technology</td>
</tr>
</tbody>
</table>
SnoreSounds Clinical Evidence

Two developmental studies conducted by University of Queensland in Brisbane have demonstrated the feasibility of a low-cost, unattended OSA detection test using acoustic monitoring & proprietary algorithms for analysis of snoring sounds.

- Both studies compared acoustic snore detection algorithm to PSG in sleep labs

<table>
<thead>
<tr>
<th>Feature</th>
<th>STUDY 1</th>
<th>STUDY 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjects</td>
<td>n=41</td>
<td>n = 86</td>
</tr>
<tr>
<td><strong>Sensitivity</strong></td>
<td><strong>89%</strong></td>
<td><strong>93%</strong></td>
</tr>
<tr>
<td><strong>Specificity</strong></td>
<td><strong>92%</strong></td>
<td><strong>93%</strong></td>
</tr>
<tr>
<td>AHI Threshold</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

- The SnoreSounds detection method & analytical algorithm (US Patent pending) has robust potential for OSA diagnosis in an unattended environment.
- Additional clinical studies are required to replicate & validate these results.
Goal: Replace Traditional Tests with Disease Management Tool

A low cost app uniquely addresses patient, provider, and payer needs, efficiently & economically increasing detection of patients-at-risk. The app also delivers therapy adherence techniques to improve disease management & outcomes.

**Patient Needs**
- Easy to use
- No discomfort
- Accurate results
- Affordable

**Provider Needs**
- Easy to order
- Accurate
- Immediate results
- Reimbursement

**Payer Needs**
- Cost efficient
- Reduce PMPY cost
- Proven outcomes
- Therapy adherence

**Consumer strategy**
- Social media
- Online advertising
- PR & mass media

**Provider strategy**
- Strategic partner sales force
- KOL Advocacy

**Payer strategy**
- Clinical evidence
- Cost savings
- Nat’l Acct force
SnoreSounds Consumer Business Model

A simultaneous, three-prong business model will enable the company to grow substantial revenue from:

1. Consumer in-app purchases

   • Distribute app directly to snoring consumers
   • Record & analyze snoring to predict OSA
   • **Charge in-app fee for MD report** for positive OSA patients
   • In-app **purchases of additional services**
   • Validated diagnostic app allows MD to treat without further testing
2. License the SnoreSounds algorithm to other health, fitness & wellness partners.

- Therapy companies
- Wearable fitness monitors
- mHealth sensor leaders in diabetes, cardio, respiratory
- Disease management firms
- Payers concerned about OSA

### Universal Platform Integration

Universal application program interface (API)

<table>
<thead>
<tr>
<th>Company/Product</th>
<th>Description</th>
<th>User/Patient Base*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitbit, Jawbone, Nike</td>
<td>Wearable activity tracker devices</td>
<td>12.6 mil</td>
</tr>
<tr>
<td>Azumio, Sanofi, etc.</td>
<td>All combined diabetes apps</td>
<td>3.7 mi</td>
</tr>
<tr>
<td>United HC, WellPoint</td>
<td>Top 2 US health insurers</td>
<td>68.8 mil</td>
</tr>
<tr>
<td>Healthways, Alere, etc.</td>
<td>Major disease management firms</td>
<td>50.0 mil</td>
</tr>
</tbody>
</table>

Integrating SnoreSounds with popular activity trackers, related mHealth apps & healthcare companies would result in millions of downloads and a massive patient database.

* 2013 estimate
3. Recurring revenue will be generated by repeat tests, data fees & member fees from participating health plans.

- Repeat tests advised for patients with mild-moderate symptoms or negative tests with risk factors
- Monthly data access fees to licensees
- Annual per-member fees from participating health plans

Recurring Revenue Stream

Monthly Data Access for Trend Analysis

*2013 estimate
Consumer Directed Diagnostics (CDD) Pipeline

Appian pipeline benefits patients & physicians:

- A second medical app for use by physicians and parents to identify *children* at risk for OSA – a growing problem in the USA, linked to ADHD, diabetes, and growing obesity.
  - *SnorKid* screens for moderate-to-severe OSA
  - Highly predictive & clinically validated

- Appian is actively seeking & evaluating complementary technologies to cement leadership in the delivery of accessible, accurate & affordable OSA diagnosis and management

**CDD Needs**

- Accessible
- Accurate
- Affordable
In the News: Digital Health Partnerships

Recent mHealth deals with major pharma, medical device & consumer brand companies demonstrate the growing interest in digital technology:

• **Corventis** – acquired by Medtronic for ~$150 million
  - Fluid sensing & cardiac telemetry patch system
  - Viewed as enhancement to MDT acquisition of Cardiocom
  - Strategic focus on congestive heart failure

• **Proteus Digital Health** - $120 million investment from Novartis and Otsuka Pharmaceutical
  - Helius system “smart pill” – ingestible sensor & patch
  - Monitors medication adherence
  - Tracking data for physicians & family caregivers

• **Zephyr Technology** - acquired by Covidien (undisclosed sum)
  - Sensors measure heart rate, breathing, ECG, posture
  - Strategic focus on remote patient monitoring to reduce hospital re-admissions

• **MapMyFitness** - acquired by Under Armour (athletic apparel) for $150 million
  - Activity & fitness tracking apps & social networks with integration capabilities
## Potential SnoreSounds Partnerships

### Prime Targets

#### Consumer Technology & Software
- Apple
- Samsung
- Google
- Intel

#### Wearable Sensors & Health Apps
- Fitbit
- Jawbone
- Nike
- Basis
- ResMed
- Philips/Respironics
- Medtronic
- Abbott
- J&J

#### Therapy & Medical Devices
- United HC
- WellPoint
- Healthways
- Alere
- Cardiocom

#### Payers & Disease Management
- Azumio
- Dexcom
- Telcare
- WellDoc
- ResMed
- Philips/Respironics
- Medtronic
- Abbott
- J&J
- United HC
- WellPoint
- Healthways
- Alere
- Cardiocom

### Key Benefits

- Competitive differentiation
- Enhance customer experience
- Aggregate relevant user data
- Qualified leads

- Add sleep assessment data
- Gather co-morbidity data
- Increase customer value
- Enhance connectivity

- Qualified leads
- In-home convenience
- Mass market screening
- Test therapy effectiveness

- Large scale risk assessment
- Efficient cost per member
- High completion rates with no false negatives
- Access to big data
SnoreSounds Key Milestones Timeline

Seed Round
$0.5 - $1 MM

Series A
$2 - $4MM

Q4 2014
Build core management team
Submit 510k #1

Q1 2015
Confirmatory validation study
Develop commercial app + API

Q2 2015
FDA OTC pre-sub mtg
B2B partnership pitches

Q3 2015
OTC validation study
Medicare Outcomes study

Q4 2015
Market pre-launch

Q1 2016
OTC clearance

Q2 2016
US launch

Q3 2016
CMS Policy Approval

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Funding Needs

• Seed round funding of up to $1M to complete in Q4 2014
  ➢ $500K already raised/closed
  ➢ File initial 510(k) application for OSA algorithm with FDA
  ➢ Initiate app validation study program
  ➢ Fill key management team gaps
  ➢ Initiate market research & preparation
  ➢ Operating capital

• Series A financing of $2MM-$4MM sought in Q4 2014/Q1 2015
  ➢ Conduct outcomes study to support OTC filing
  ➢ Commercial app design & development
  ➢ Submit 510(k) applications to support OTC clearance
  ➢ Business Development initiatives & partnership presentations
  ➢ Market pre-launch
### Appian Valuation at Milestones

<table>
<thead>
<tr>
<th>Round</th>
<th>Amount</th>
<th>Pre-Value</th>
<th>Milestone</th>
<th>Post Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed Round</td>
<td>$1MM</td>
<td>$5MM</td>
<td>Rx clearance for algorithm use in lab</td>
<td>$20MM</td>
</tr>
<tr>
<td>Series A</td>
<td>$2MM-$4MM</td>
<td>TBD</td>
<td>FDA cleared as consumer OTC diagnostic</td>
<td>$200MM</td>
</tr>
<tr>
<td>Series B</td>
<td>$7MM - $10MM</td>
<td>TBD</td>
<td>CMS Therapy coverage via app diagnosis</td>
<td>$2BB</td>
</tr>
</tbody>
</table>

1) **Initial FDA 510(k) application & support studies**
   - Yields clearance for OSA algorithm as equivalent to existing standards
   - Access to diagnostic device market generating $200MM annually in USA
   - Sell or license to sleep physicians & labs
   - Valuation based on potential market share

2) **Consumer OTC diagnostic 510(k) & support studies**
   - Yields clearance for consumer diagnostic tool & physician path to treatment
   - Access to OSA testing market generating >$6BB annually in USA
   - Clearance with clinical evidence will set the standard for mobile OSA detection
   - Prime licensing candidate for related health & fitness apps & monitoring devices

3) **CMS coverage decision for home diagnosis**
   - Cements role as disruptive method for wide scale OSA detection
   - Opens payers to partnership for disease management of co-morbid members
   - Prime candidate for respiratory device acquisition
   - Elimination of sleep labs for OSA dx
## Management Team

<table>
<thead>
<tr>
<th><strong>Michael J. Thomas</strong></th>
<th><strong>Michael Cheney</strong></th>
<th><strong>Jonathan Freudman, MD</strong></th>
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<tbody>
<tr>
<td>Chairman, CEO, Founder</td>
<td>Chief Marketing Officer</td>
<td>Medical Director</td>
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</table>

**Michael J. Thomas**
- Former CEO of iSonea Ltd (ASX:ISN), created $250MM shareholder value in a respiratory mobile health & medical device company
- CEO of Appian Partners LLC, a device & healthcare consulting firm
- Former President & CEO of Sleep Solutions, a VC-backed medical device company & pioneer in home sleep testing
- Raised >$100 million in VC / public funding over 4 start ups
- Former EVP Sales & Marketing for National Sleep Technologies, leading the acquisition of 80 sleep labs (NST acquired by GE Medical)
- Former VP Sales at Patient InfoSystems (NASDAQ:PATI) and instrumental in taking company public
- Pharmaceutical experience at Merck and GlaxoWellcome
- Microbiology degree from Cornell University

**Michael Cheney**
- Former VP Marketing for iSonea Ltd, a respiratory mobile health & device company
- Former VP Marketing & International Business Unit, Cyberonics Inc.
- Former Marketing Officer, NovaSom Inc, a pioneer in OSA home sleep tests
- 25 years in strategic marketing leadership roles in phama, biotech, device
- Launched market leading/shaping brands for Wyeth, BASF/Knoll, Cyberonics

**Jonathan Freudman, MD**
- Founder, Freudman Healthcare Consulting LLC with 25 years of healthcare experience
- Medical Director, iSonea Ltd; former Medical Director, Sleep Solutions Inc.
- Pivotal role in Medicare National Coverage Decision for home sleep testing for OSA
- Previously managed Medical Policy Dept., Blue Shield of California & chaired P&T Committee; served on national BCBSA Medical Policy Committee
- 16 years in practice of internal medicine at Kaiser Permanente; dept. Chief of IM
- Board Certified IM; FACP; grad. George Washington University School of Medicine

**TBD**
- **Chief Technology Officer**
- **VP Sales & Business Development**
Appian Potential Exits

- ResMed
- Philips/Respironics
- Fisher & Paykel
- Teijin
- CareFusion
- Natus Medical
- Alere
- Medtronic
- Healthways
- Johnson & Johnson
- Abbott
- Sanofi
- Eli Lilly
- Takeda
- Astellas
- Ono Pharmaceuticals
- Daiichi Sankyo

- United Healthcare
- WellPoint/AIM
- CareCore National
- Telcare
- Dexcom
- Fitbit
- Jawbone
- Google
- Yahoo
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- Samsung
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Big Data mHealth Solution for Consumer Directed Diagnostics

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