Muscle Sensing for Data Analysis and Treatment

Team: Aysar Khalid, Hassan Chehaitli, Mohammad Aryanpour

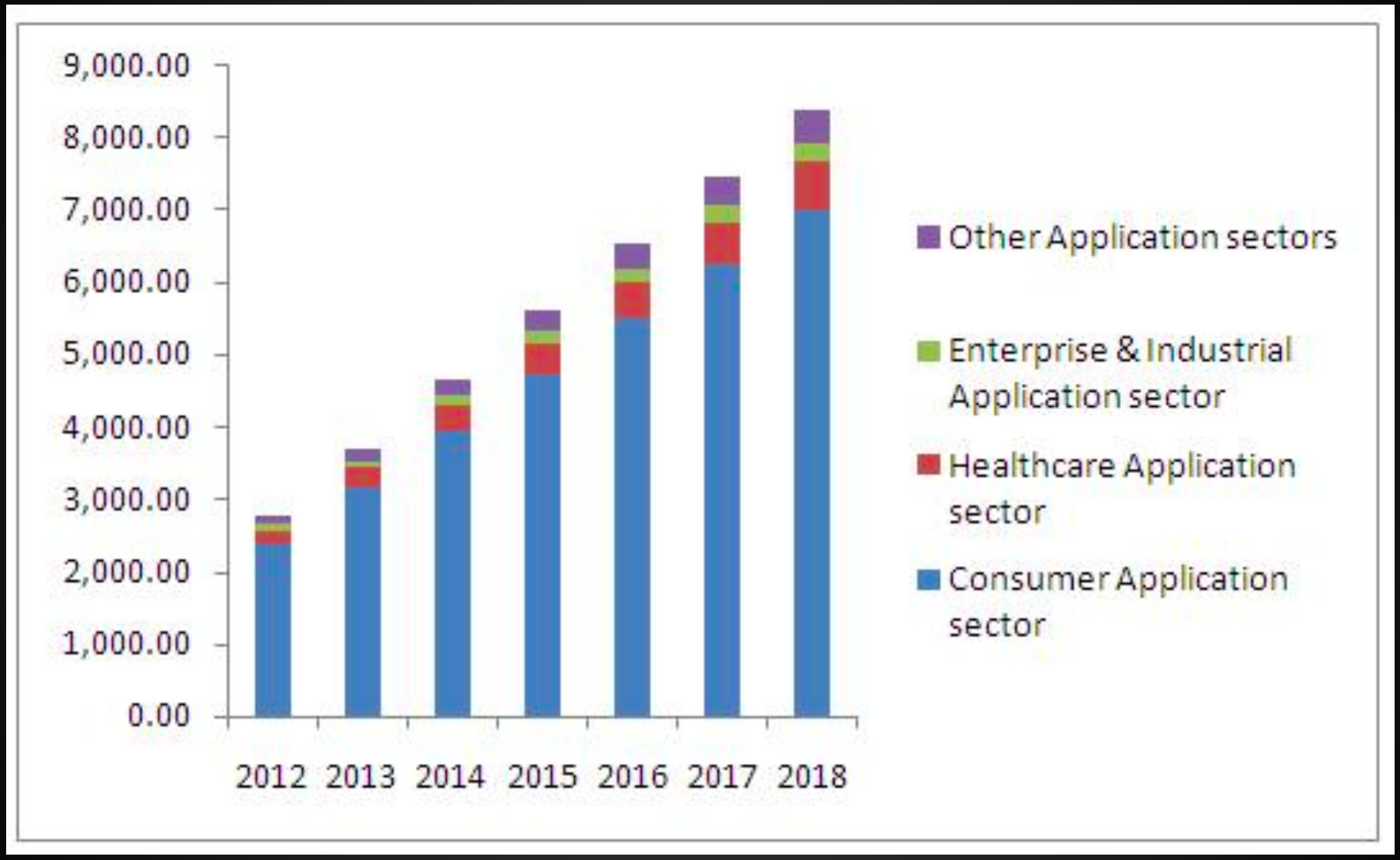
Advisor: Professor Ebrahim Ghafar-Zadeh

Motivation

- Wearable computing devices are projected to explode in popularity over the next year
- Market to exceed $6b by 2016 and $12b by 2018
- Aging population projected to double within a 100 years

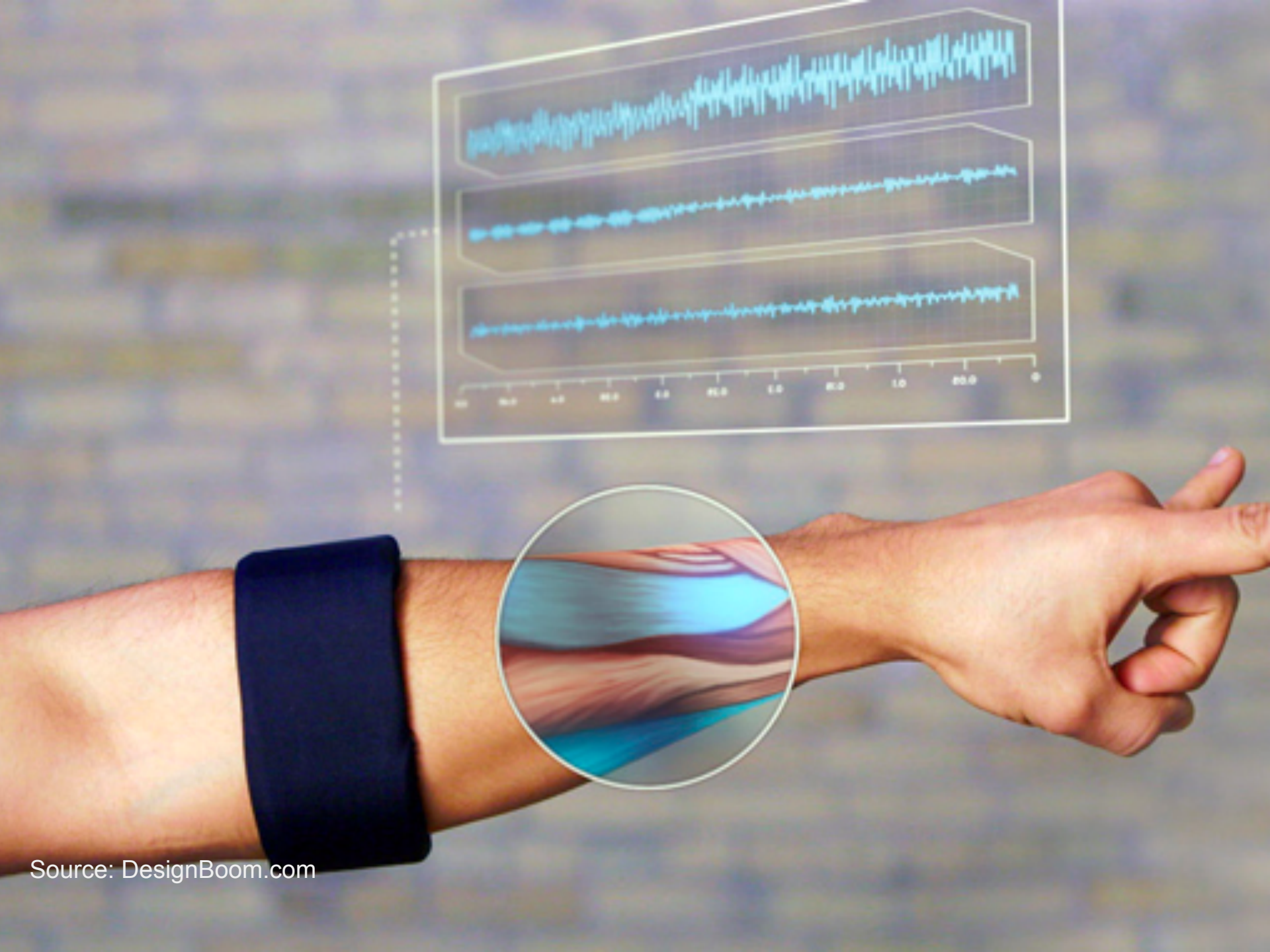
Source: ABI Research
https://www.abiresearch.com/press/wearable-computing-devices-like-apples-iwatch-will

Notes
Newsstand
Clock
Game Center
Settings
iTunes
App Store
Music
Phone
Mail
Safari


9,000.00
8,000.00
7,000.00
6,000.00
5,000.00
4,000.00
3,000.00
2,000.00
1,000.00
0.00
2012
2013
2014
2015
2016
2017
2018
Other Application sectors
Enterprise & Industrial Application sector
Healthcare Application sector
Consumer Application sector

Current Market

- MyoLink by Somaxis, wireless surface sensors
- LegSys by BioSensics, gait analysis, center of mass, balance assessment
- 61% of wearable tech targeting athletes and middle-aged



Source: DesignBoom.com

The Idea

- Muscle monitoring and analysis methods utilizing a computing system, electromyometry (EMG) sensors, and other systems

Expected Results

- Determine key metrics which can be relayed as feedback and input for autonomous treatment systems

- Key metrics such as: fatigue analysis, injury detection, muscle rehab, posture

- Potential treatments can be done via mechanical or chemical or drug systems

Conclusion

- First to market in the untapped senior market
- Limited competitor barrier to entry as sensing tech is proprietary

- Transactional business model ranging $200 - $800
- Early adopters are senior homes
- Prototype Phase 1: January 2014
  Prototype Phase 2: April 2014