

ThermaSec

Building the future of fire detection

Faculty Mentor:
 Dan Wasserman

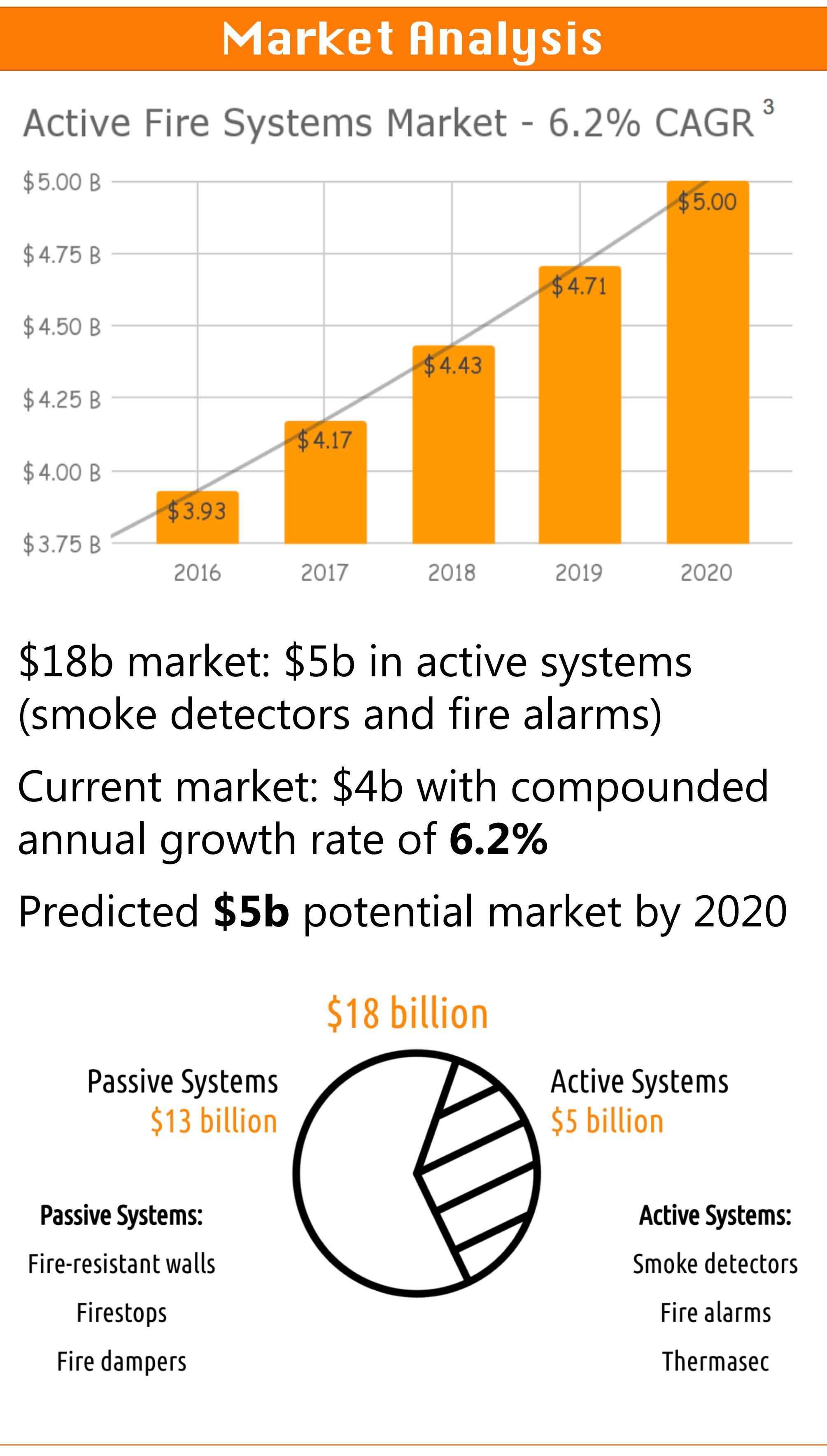
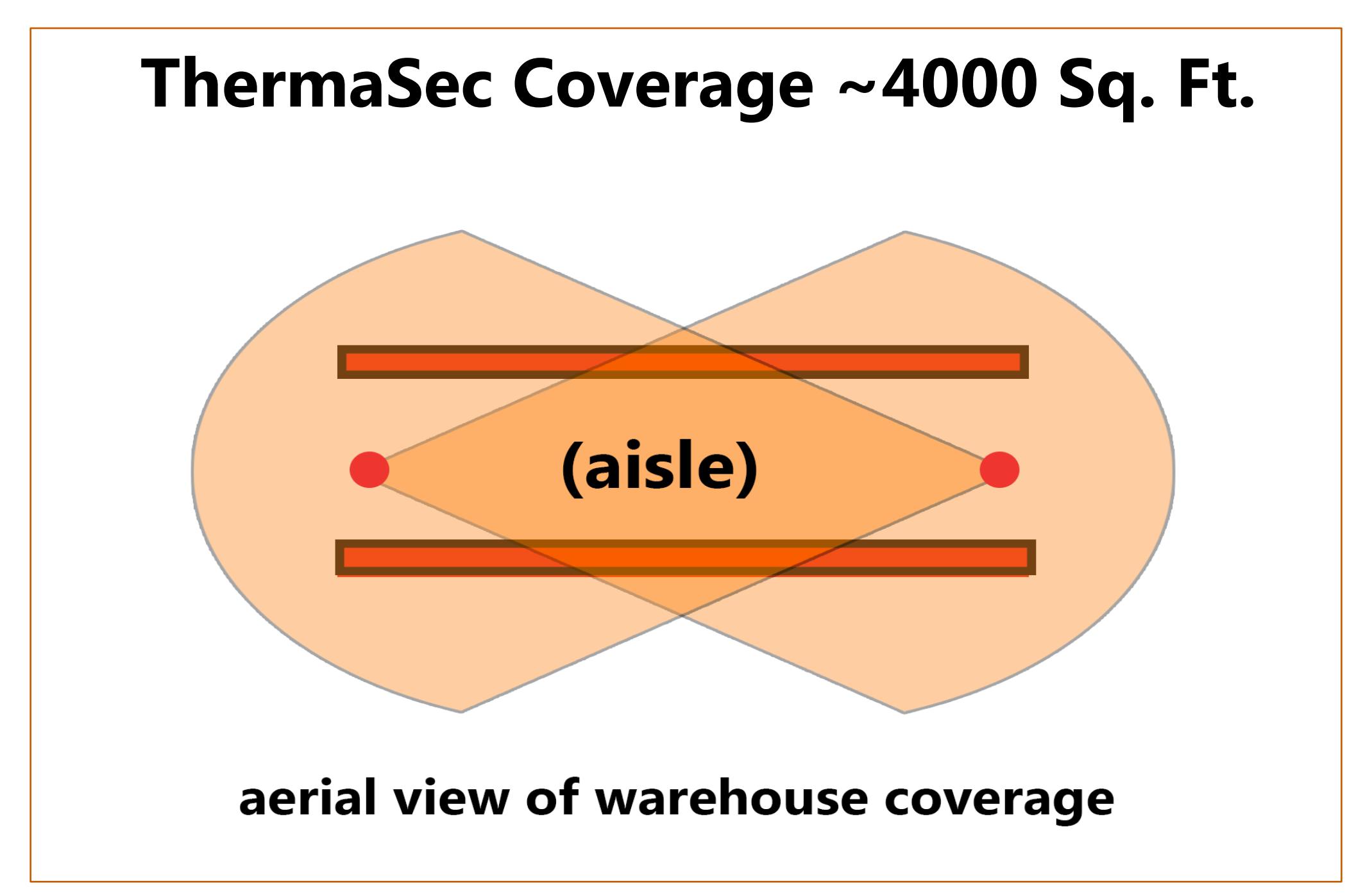
| Problem |
|--|
| Industrial smoke detectors take far too long to detect fires in high ceiling buildings, due to the increased volume in which smoke can diffuse. With fires doubling in size every 30 seconds on average, this delayed detection time results in millions of dollars in property, inventory, and sales loss as well as numerous casualties. |

| NFPA Non-Residential Fire Statistics 2017 |
|--|
| 117,000 Fires \$1.2B Damage 3,190 Casualties |

| Solution |
|---|
| Instead of waiting for smoke to diffuse to the smoke detectors on high ceilings, our detectors leverage the speed and sensitivity of a thermal camera to see the heat from a potential fire. We combine this heat vision with visible light cameras using image processing software to get accurate distance and temperature measurements and cut down fire detection time. |

| The Team |
|--|
| |
| Isaac: Founder, Applied Physics, winner of Freshman Founders |
| |
| Sahil: Software, Machine Learning, previous experience at Amazon |
| |
| Michael: DSP, Embedded Systems, previous experience at TI |
| |
| Connor: Software, Computer Vision, previous experience at Qualcomm |
| |
| Jihwan: Solid-State Electronics, 3D Prototyping, photovoltaics research |
| |
| Joel: Integrated Circuits, Photonics, Mid-IR sensing research |

| Competitive Advantage |
|---|
| Easily outperforms traditional smoke detectors used in industry in terms of speed |
| Less expensive per square foot of coverage |
| Response Time |
| Commercial Smoke Detectors |
| Optical Beam Detectors |
| Video-Based Fire Detectors |
| ThermaSec |



| Strategic Alliances |
|--|
| We plan to partner with insurance companies who cover high-ceiling structures. We can guarantee that buildings that use our detector are less susceptible to fire-induced property and inventory losses, and our insurance partners will be able to provide benefits due to the reduced risk. |
| Production Costs |
| To move from proof of concept to mass production, the prototype needs to be optimized for manufacturing. These associated costs come from individual components bought in bulk and equipment needed for testing reliability. |
| Testing Environments \$5000 Blackbody Sources \$2000 Time-of-Flight Sensor \$20 Infrared Camera \$180 PCB, Processor, & IC Parts \$10 Injection Mold Casing \$5 |
| Per Detector Cost \$215 |
| Price Point with 50% Margin \$430 |

| Milestones |
|--|
| April 2018 Prototype tested and completed |
| April 2018 Senior Design Demo @ EER Atrium |
| May 2018 Pitch Business Plan |
| May 2018 Meet with Austin Fire Department |
| June 2018 Partner with local facility managers to establish Austin presence |
| June 2018 Partner with insurance companies to promote our product |
| July 2018 Sell IP to Honeywell or Simplex |
| August 2018 Manufacture first 100 ThermaSec detectors |

| Exit Strategy |
|--|
| Our ultimate goal is to cut fire-induced asset losses and casualties by replacing slow smoke detectors with fast, IR-assisted fire detectors in all buildings. Given the production limits of a small startup, we believe the quickest way we can begin fulfilling our mission is to sell our intellectual property to a large manufacturer with the existing infrastructure and resources to optimize our prototype for mass production and distribution. The sooner our product is in the hands of consumers, the more fires we can potentially stop and the sooner fire losses will be a problem of the past. |