The PAPRa

Powered, Comfortable N95


Mission statement:
Affordable, Comfortable
Breathing Protection

The problem(s)

1. Regular people cannot get N95s that easily fit their face and give proper protection against small particles like viruses, ash, and other pollutants
2. Well fitting respirators have side-effects: headache, skin issues, bruising
3. N95 Respirators require annual training to provide adequate protection
4. People with facial hair are not protected well utilizing N95 respirators
5. Powered air-purifying respirators (PAPRs) are very expensive, specialized, and generally not available

The solution

We have created a powered respirator that is comfortable, affordable, and can be made readily available

The team

Mark Roden, PhD

President and CEO
Tetra Bio Distributed

PhD in Biomedical Engineering from UCLA, Distinguished Data Scientist at Ticketmaster

Daniel Stemen, MSRS

Director
Tetra Bio Distributed

Clinical Manager of Respiratory and Interventional Pulmonary Services at KMC of USC

Darryl Hwang, PhD

Director
Tetra Bio Distributed

Assistant Professor of Research, Radiology & Biomedical Engineering, USC, Director, 4D Quantitative Imaging Lab at KMC of USC

Patrick Campbell, MSME

Director
Tetra Bio Distributed

MSME Smart Product Design from Stanford, Technology Consultant, Named Inventor on 38 Patents, Awarded 4 Technical Emmy Awards

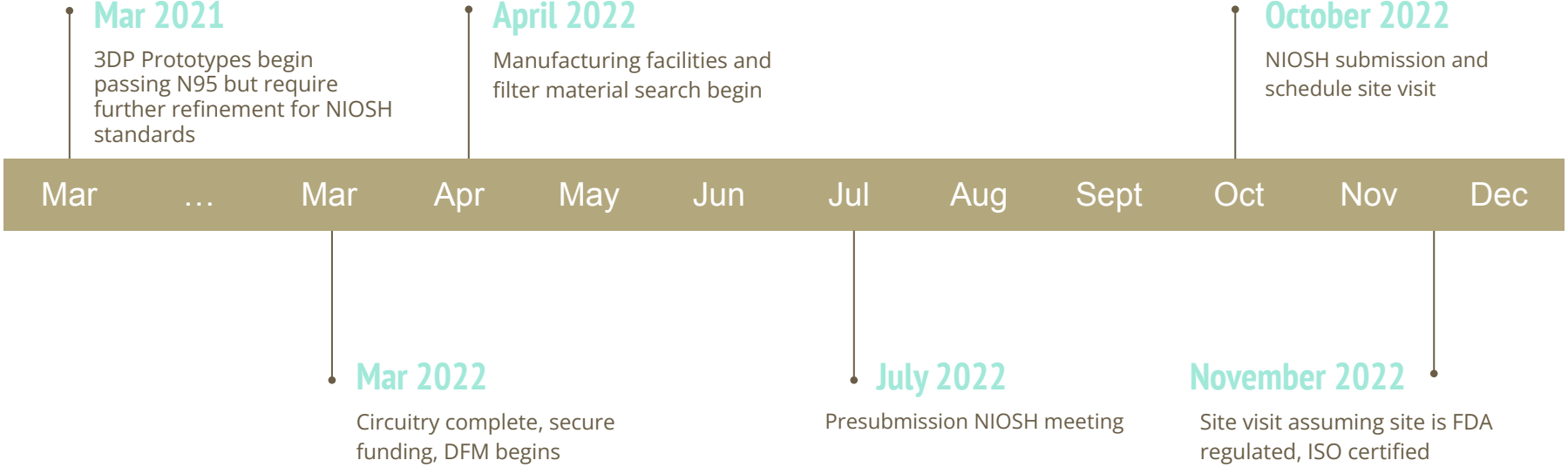
Kevin Butler, MBA

Director
Tetra Bio Distributed

MBA in Program Management Global Manager Consultant at Olympus

Milestones

Prototypes are passing N95 and have many hours of battery life; time to begin Design For Manufacturing



Appendix

How it works

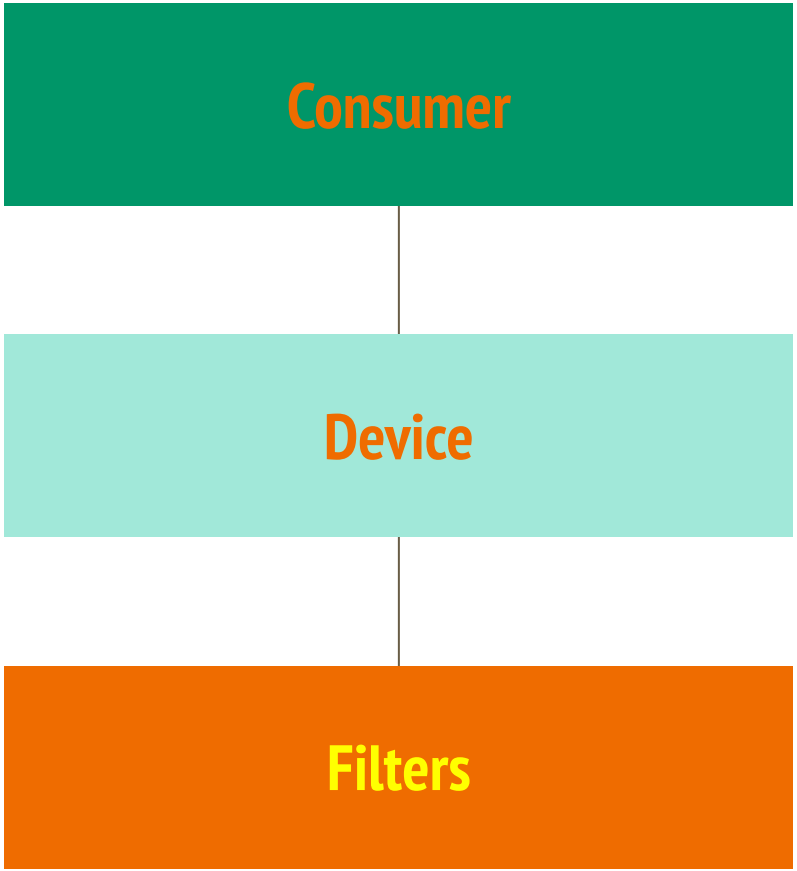
1. The fan pulls air through an H13 HEPA filter and pushes that air to a face mask
2. The positive pressure in the system means our device is more comfortable and works with beards
3. Positive airflow prevents unfiltered air from entering the mask and making you sick
4. The face mask will have filters for passive N95 respiration if the power is off, allowing us to target NIOSH APF 10 certification, which is a lower barrier to entry

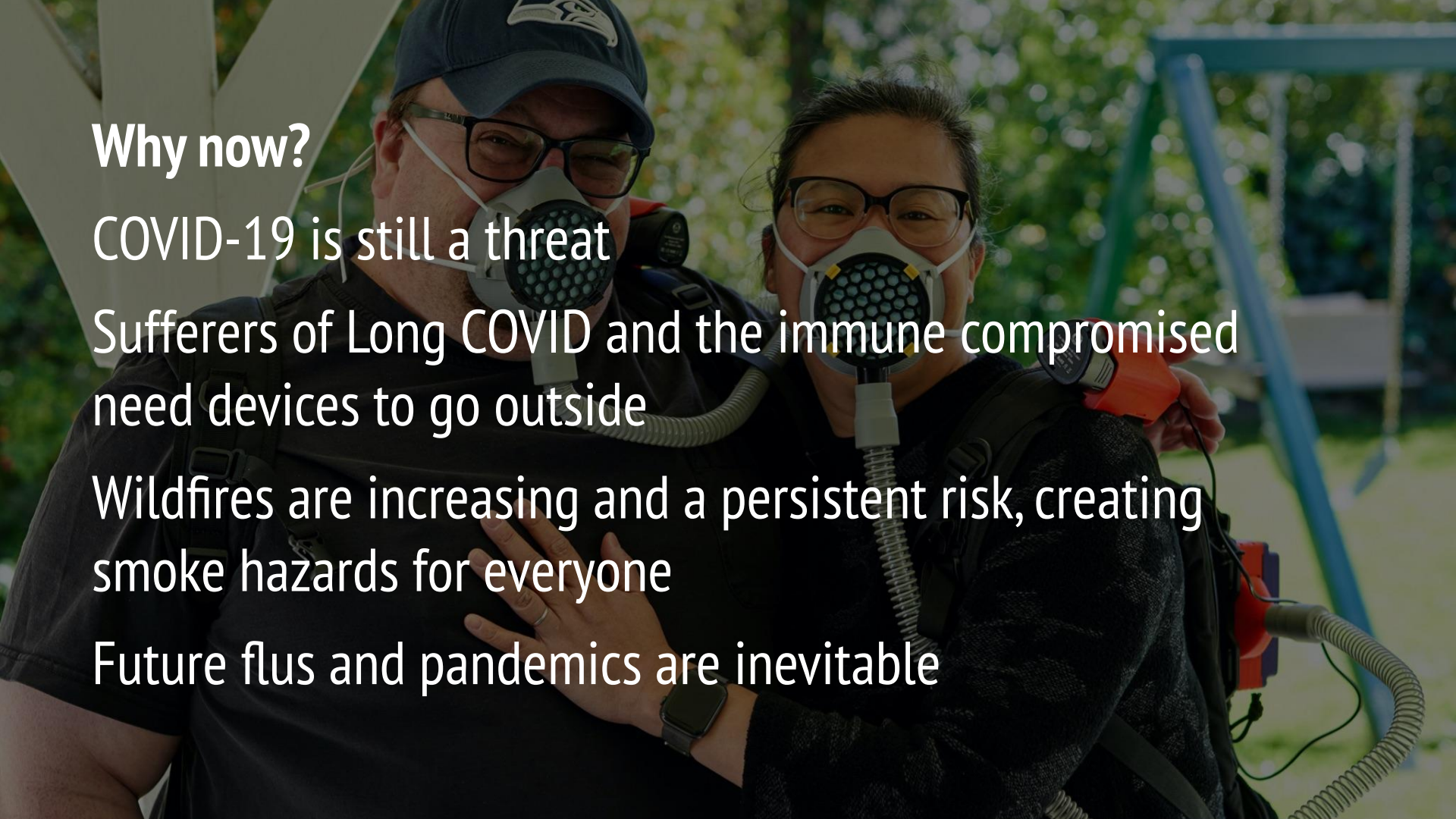

The technology:
H13 HEPA + Fans

Revenue model

Filter validation is critical. H13 HEPA filtration is not an easy standard to meet. The main filter may last for up to 6 months, while filters in the mask need more frequent replacement. After initially purchasing the device, filters are the recurring revenue source driving continuous growth.

Similar devices cost at least $1.2k. Our prototype material cost is $75 and can be brought lower through mass production, so we can keep unit cost down to achieve more market penetration.





Why now?

COVID-19 is still a threat

Sufferers of Long COVID and the immune compromised need devices to go outside

Wildfires are increasing and a persistent risk, creating smoke hazards for everyone

Future flus and pandemics are inevitable