

# Milk Quality Analysis at Villages in India

## Field-Scale Applications of Diffuse Optical Spectroscopic Imaging

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### Opportunity

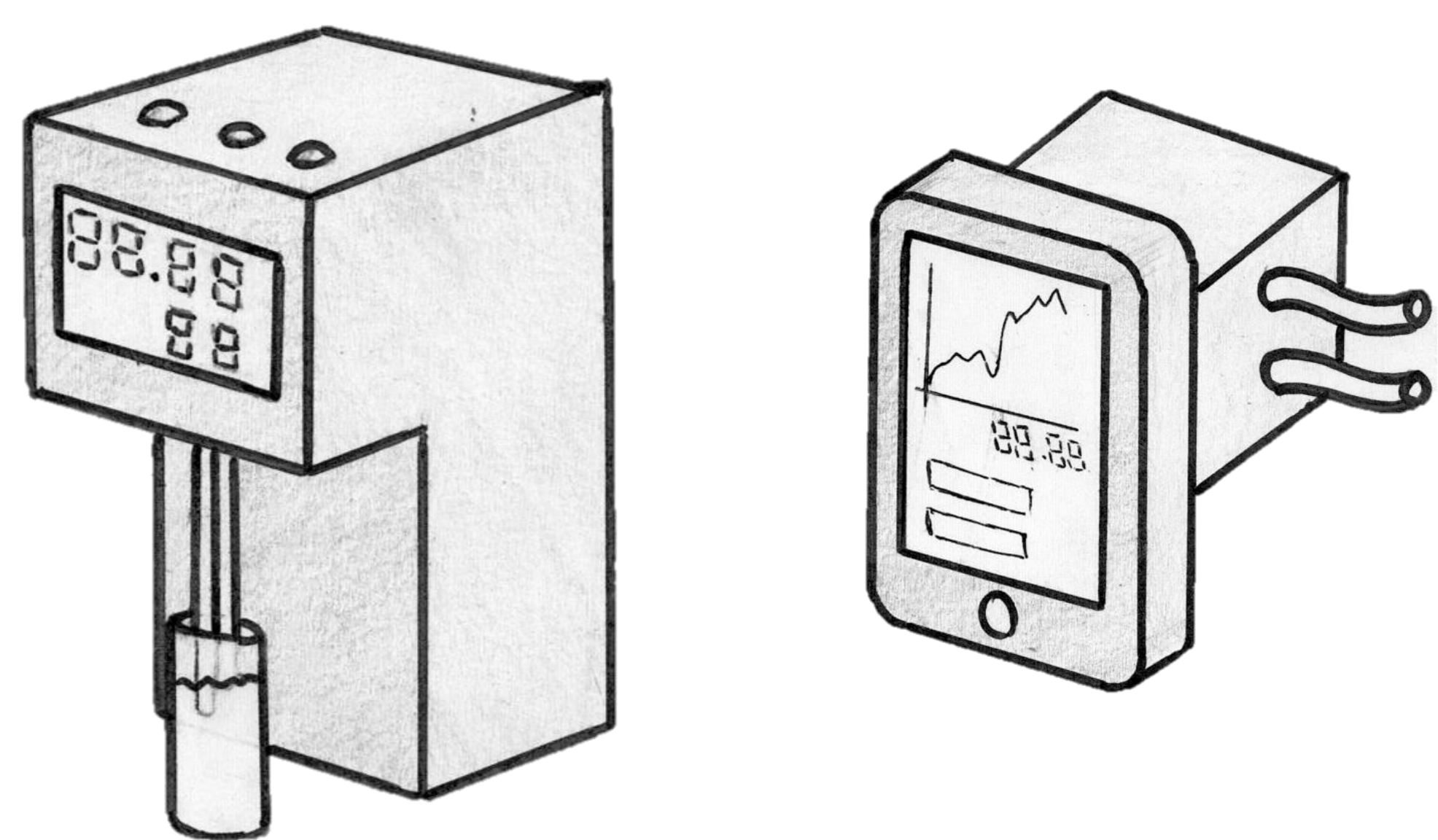


Milk is purchased from millions of farmers in villages across India. Payments are based on milk fat measurement

Instruments used are unreliable and discourages farmers. As a result, **only 14% of produced milk is processed**, while the rest is sold loose

Loose milk frequently suffers from **adulteration** and **spoilage**. This directly affects the health of 1.3 Billion Indians

### Solution

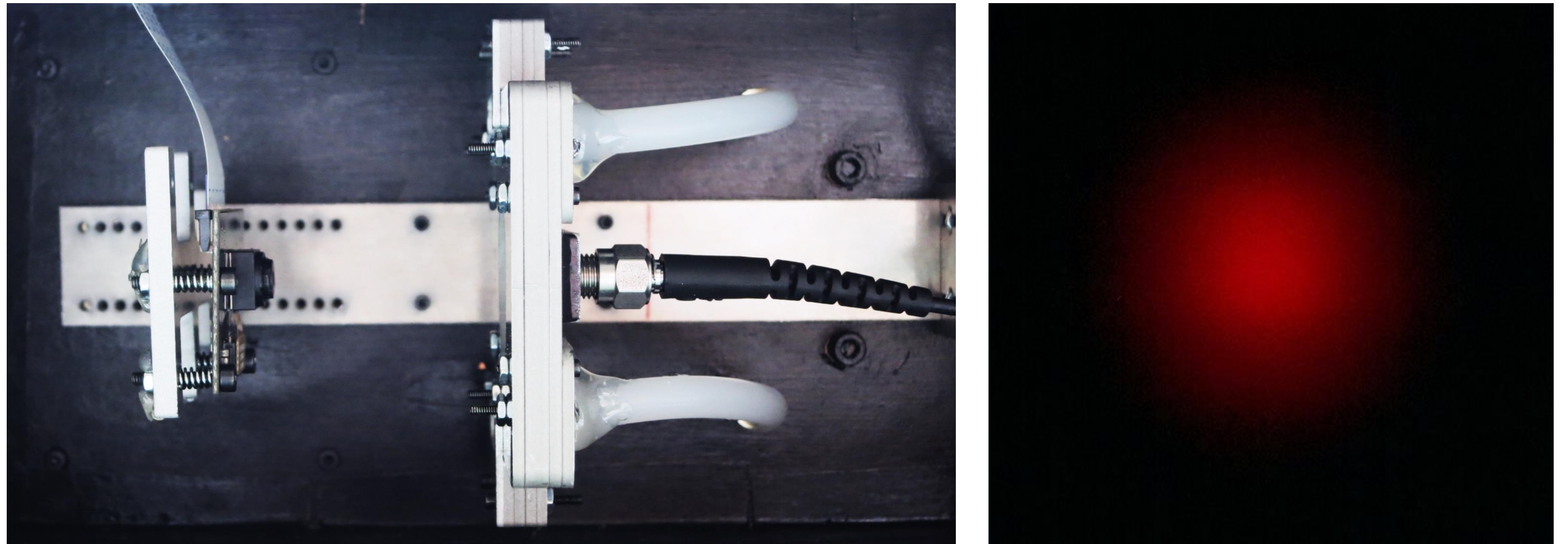


We are developing optical instruments for analyzing Milk Fat and Protein in field-scale environments

**Reliable measurements** attract more farmers, increasing the reach of the formal industry

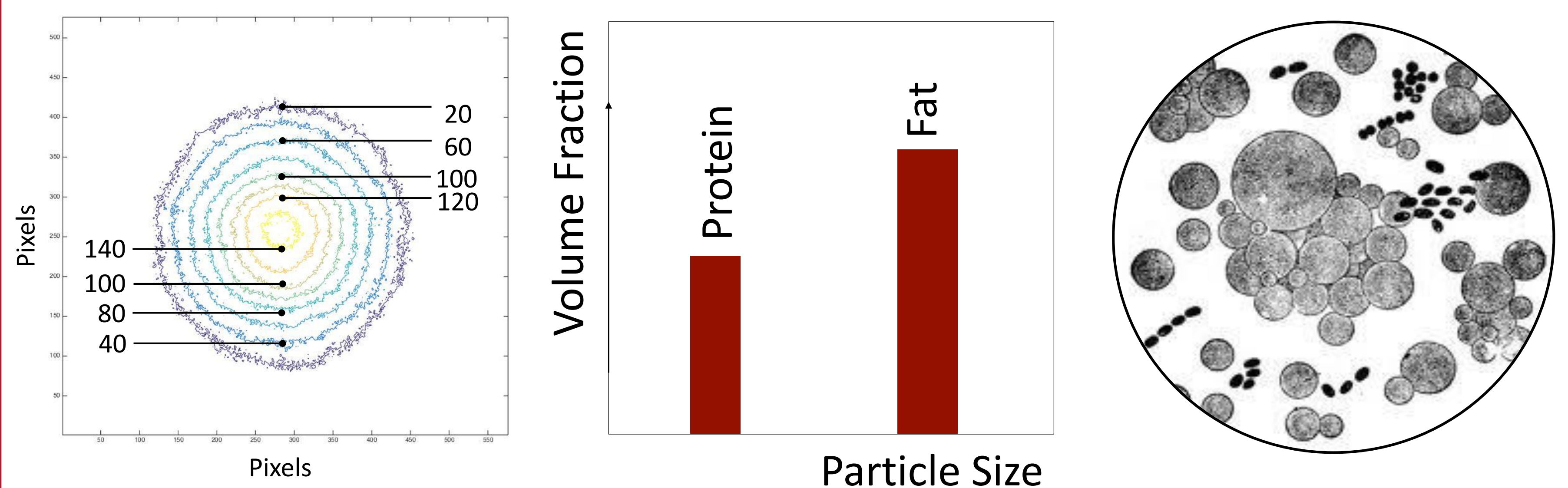
Farmers also receive critical feedback on **Cattle Health and Feed**, helping increase yield and household income.

### Technology

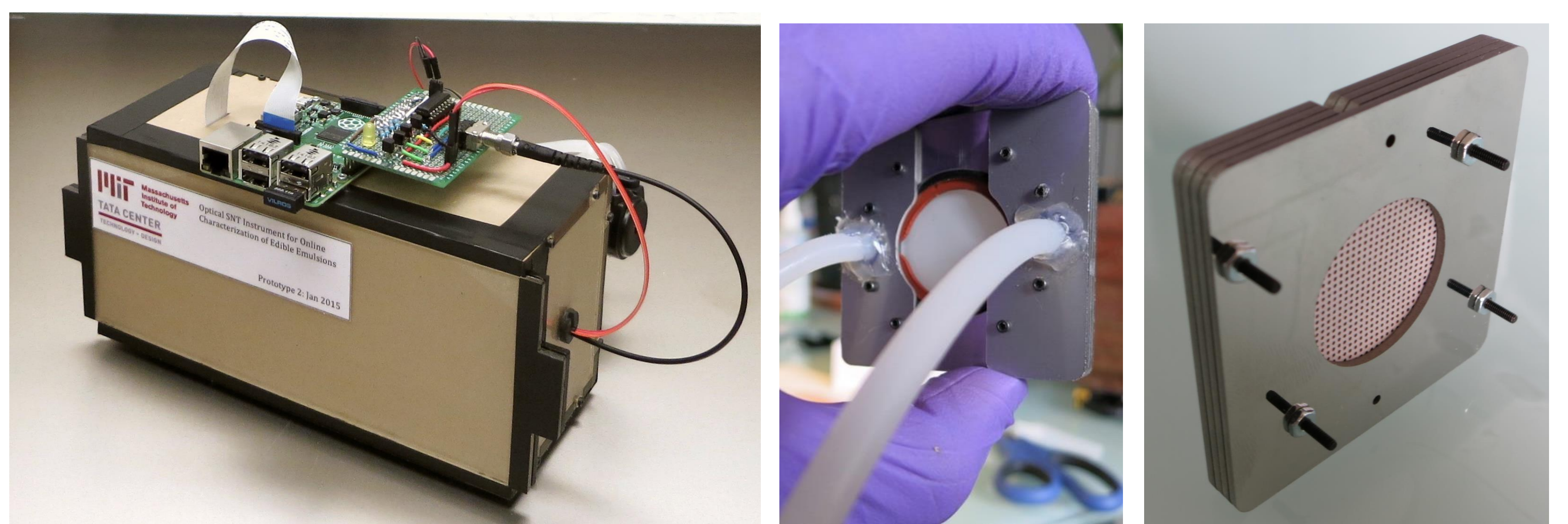


Diffuse Optical Spectroscopic Imaging uses cameras to capture the diffusion and scattering of light in milk. This can be used to quantify particle **size distribution** and **volume fraction**.

Fat Globules (5  $\mu\text{m}$  – 15  $\mu\text{m}$ ) are much larger than Protein micelles (100 nm – 500 nm). The two can hence be clearly distinguished using our instrument.



### Next Steps



We are developing prototypes for field testing and feedback in India. We have forged critical partnerships with Dairy Organizations and Cooperatives to help develop a commercialization channel.

### Acknowledgements

This work is supported by the Tata Trusts. We also acknowledge all individuals and organizations in different parts of India who have participated in the background study and provided feedback

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