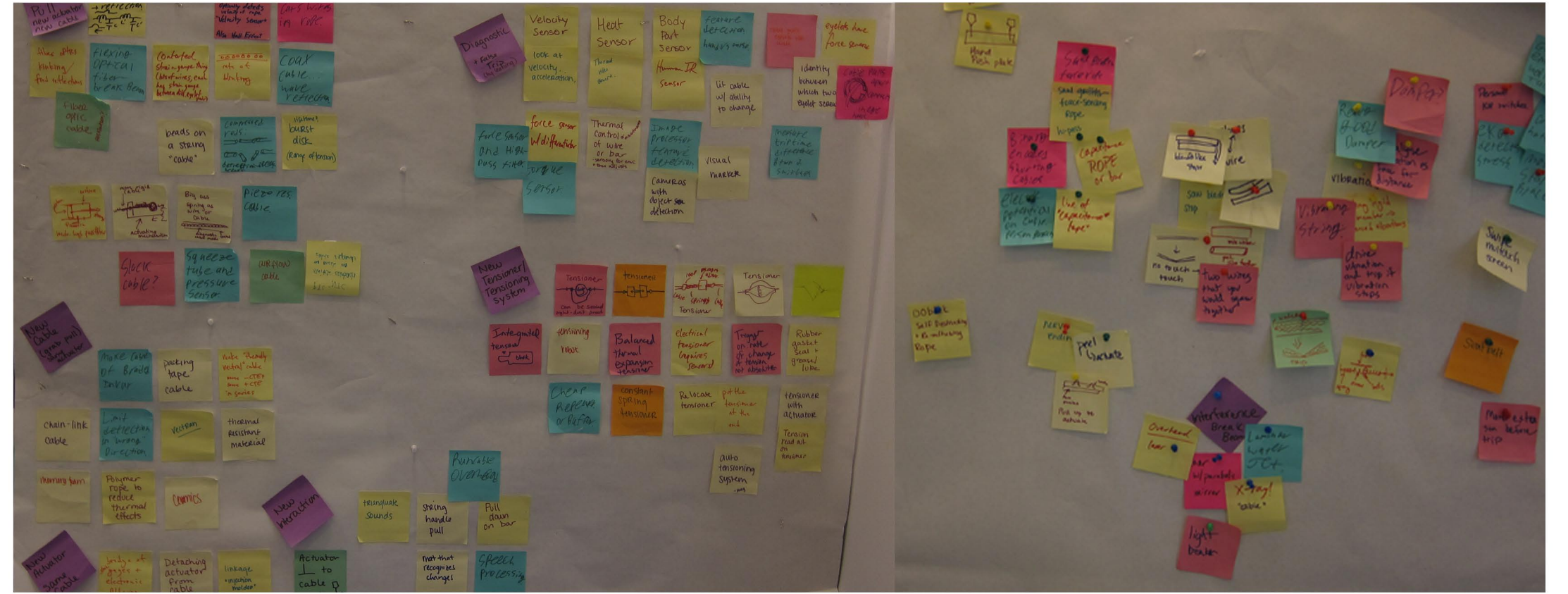


Designing and Prototyping the Next-Generation Cable Pull Switches

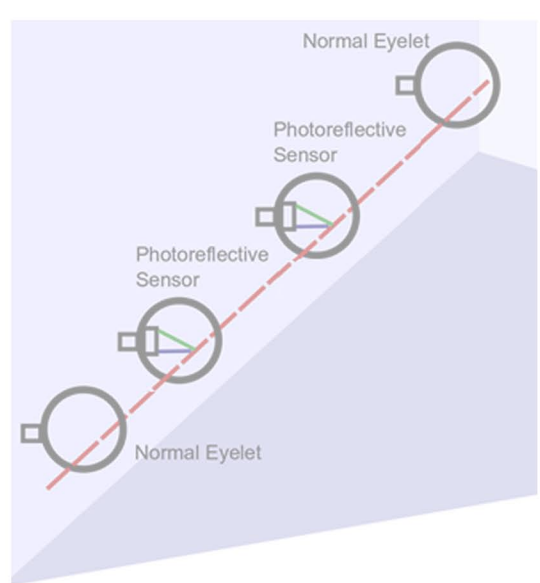
Requirements

Stable in varied temperature changes
Robustness
Ease of installation
Cost-effective
Conforms to standards

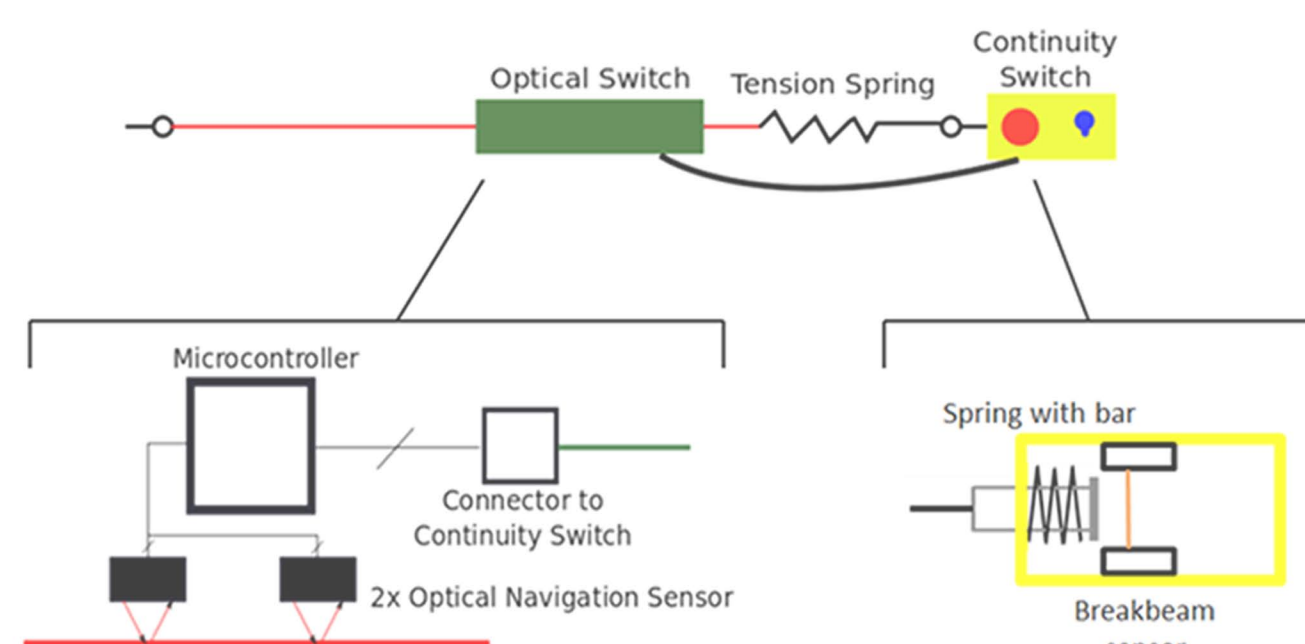
Idea Generation



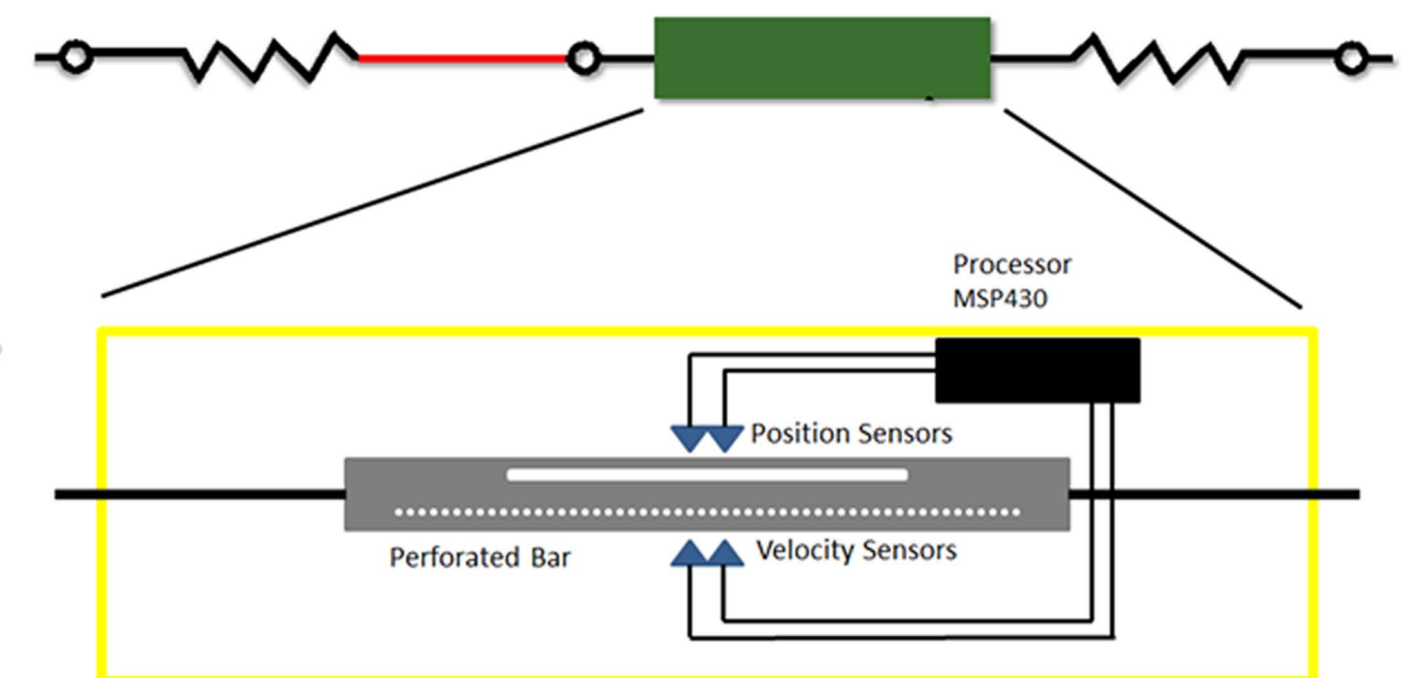
Chose Distributed Optical System



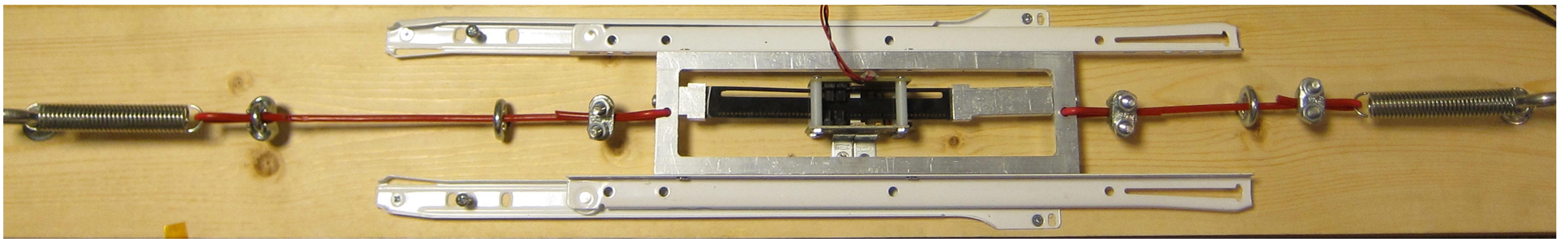
Refined System to Two-Piece Optical System



Further Centralized to Current One-Piece System

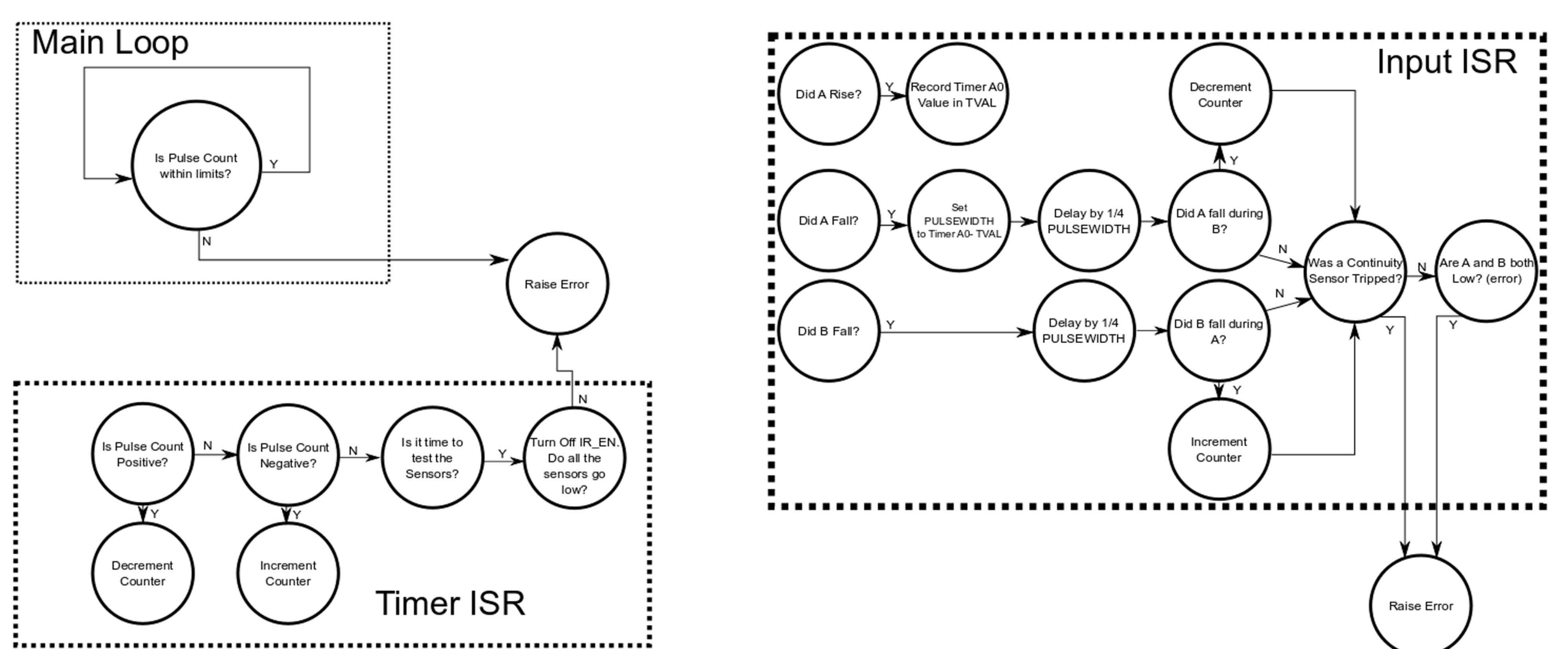
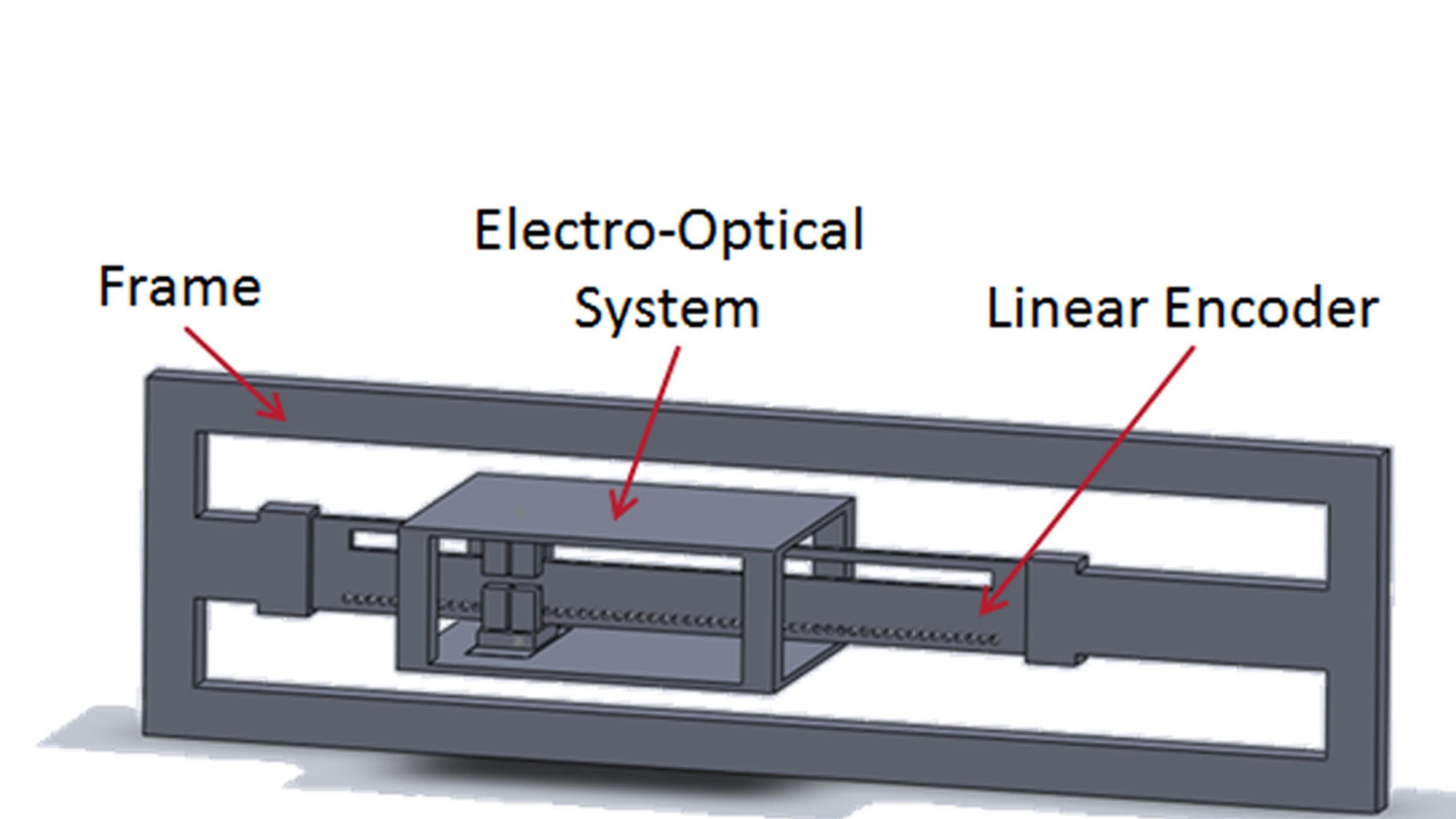


Current Prototype



Velocity sensors help to differentiate between a slow, small linear change from thermal expansion and a fast linear change from an emergency pull

Position sensors help to determine when the cable is cut and all tension is released in the system



System will send a low signal to the operating machine if one of the sensors malfunctions, cable is cut, or power fails.

The system will also send a low signal due to a human pull. It will discount movement due to slow thermal expansion and fast vibrations.

Depending on housing, product can be robust to particulate matter.



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