

PROJECT RASCL: CATHETER CAMERA INTEGRATION



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TEAM 4

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PROJECT SUMMARY:

Team 4 partnered with Nextern to develop an innovative single-use bronchoscope prototype. Traditional single-use bronchoscopes often struggle to provide clear imaging, making it challenging for healthcare professionals to visualize internal anatomy and tissues accurately. Our solution integrates a micro-camera and a custom multi-modality lighting system directly into the catheter. The camera delivers high-quality, real-time visuals while the lighting system dynamically enhances tissue contrast, enabling more precise identification of potential issues or diseases. We designed and tested a prototype to ensure it is safe, user-friendly, and can be assembled quickly. Our solution aims to improve accessibility, diagnostic precision, and patient outcomes.

DESIGN GOAL:

Develop a cost-effective, disposable endoscope with multi-modality lighting for use in diagnostic procedures. The design will integrate seamlessly with previous RASCL projects, ensuring compatibility and enhancing overall functionality.

DESIGN CONSTRAINTS:

- The camera must be compact, with a maximum edge size of 2 mm.
- It should provide a wide field of view, capturing at least 120 degrees in its direction of focus.
- The system must include at least one type of specialized lighting to differentiate various tissues.
- Unit cost shall not exceed \$500

