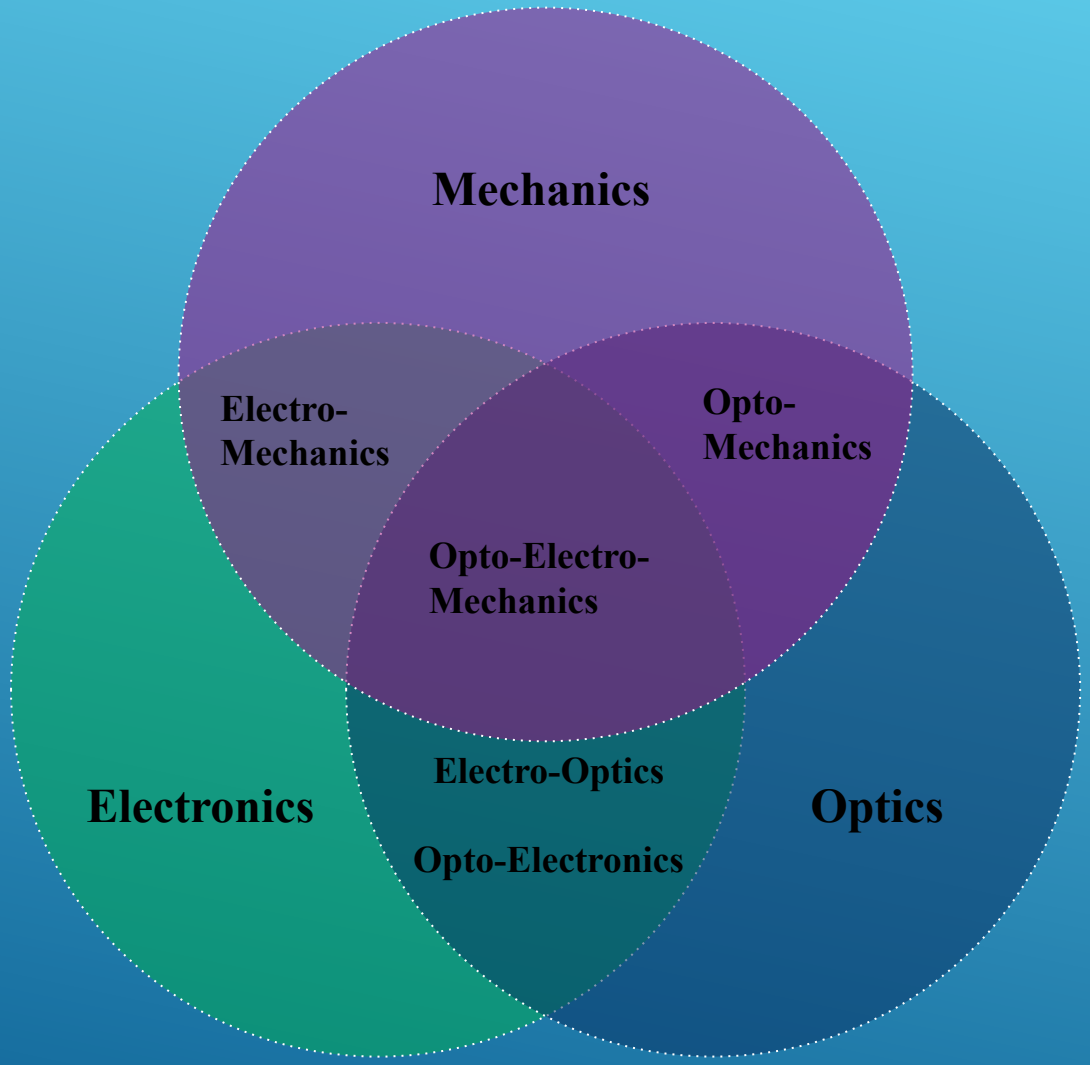
DEVELOPMENT ROAD MAP AND DESIGN MEANS

Our Research And Development Capabilities



Hardware Development Life Cycle

Analysis

- Development and coordination with customer of Requirement Specification
- Estimation of our own capabilities to fulfill critical requirements for object to be designed
- Estimation of MH and time required. Gantt chart
- List of internal partial Requirement Specifications for the component constituents of system

Proof of Concept

- Proof of concept stage; basic experiments
- Paper design, computations, simulations and modeling
- Internal coordination of interfaces between optics, mechanics and electronics

Design

- Functional block outline of system in question
- Optical design
- Electronics design
- Embedded software design
- Mechanical design
- Coordination of draft design with Customer and side vendors, manufacturers

Manufacturing

- Development of manufacturing documentation
- Creating BOM (Bill of Materials)
- Search of vendors and ordering of custom components
- Manufacturing and tracking of custom components
- Assembling

Testing

- Tuning testing of separate components
- Entire system debugging
- Experimental measurements and investigation of critical parameters following Requirement Specification

Support

- Reporting
- Development of final documentation
- Delivery of final system (prototype) and proper documentation

Hardware and software development means

- **Analysis, simulations, calculations:**
  - Monte Carlo simulation; Statistical analysis; DSP and Image Processing Algorithm development; Mathematical modeling and optimization of different physical processes (optics, thermodynamics, magneto statics)
  - **Software:** Mathcad, Matlab, Python, SolidWorks Simulations
- **Optics:**
  - Optical computations; Test image synthesis and analysis
  - **Software:** Zemax
- **Electronics:**
  - Analog circuit design, digital circuit design, PCB design, simulation.
  - Engineering Prototype, experimental design of verification tests
  - **Software:** Altium, Cadence
- **Mechanics:**
  - 3D modeling, design aided assemblies, performing of research and assembly works, calculation of load, development and optimization of technological way for detail processing, development of design documentation
  - **Software:** SolidWorks, Inventor, AutoCAD, MasterCAM
- **Software/Firmware design:**
  - Programming languages: C, C++, C#, VB.NET, VBA, Python
  - IDE's: Keil, Visual Studio, Eclipse C/C++, Altera Quartus II, MySQL Workbench
  - Technologies: Computer / Machine Vision, Machine Learning (OpenCV, TensorFlow, Scikit Learn)
  - Control version: SVN, Git
  - Platforms for embedded systems: ARM, X86
  - Microcontrollers (STM, Atmel, NXP, Cypress, ADUC)
  - FPGA, CPLD (Altera)
  - OS's: NoOS, Windows, Linux, QNX