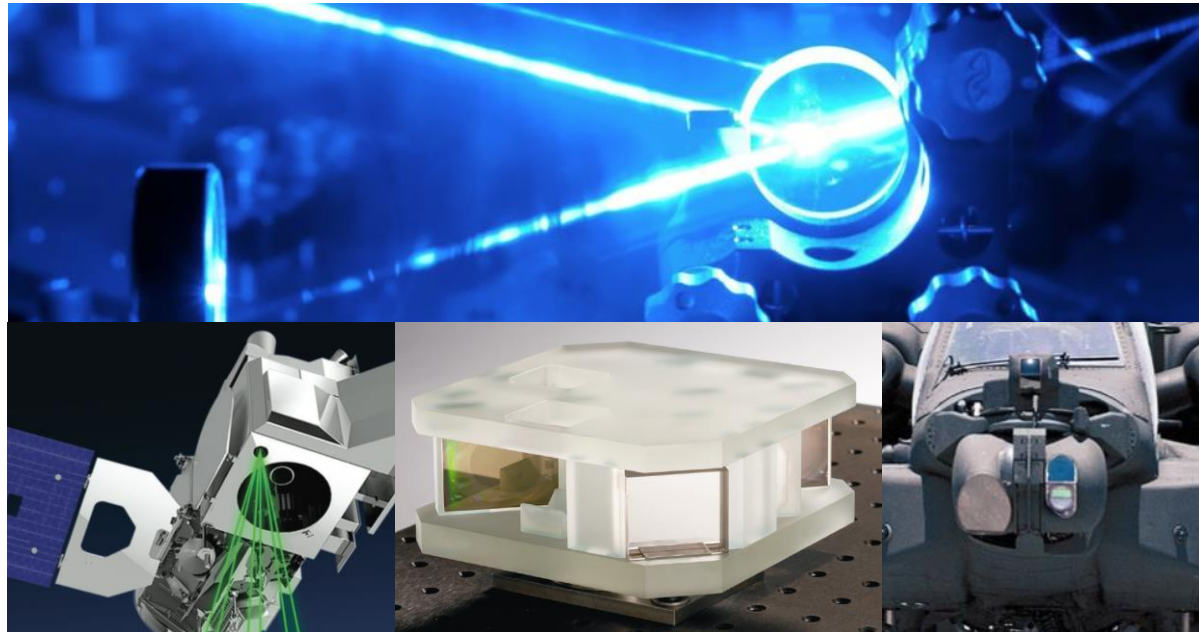




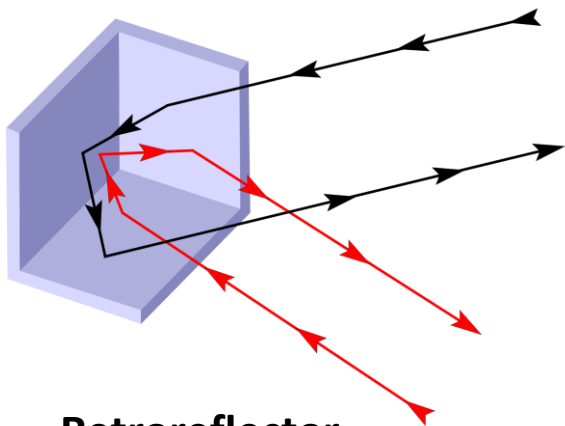
## Transforming Optical Structure Technology Through Innovative System Integration.



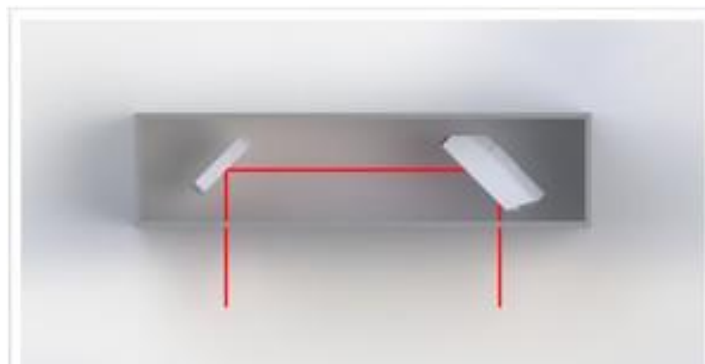
Michelle Hyers, Director of Engineering, PLX Inc.  
[mh@plxinc.com](mailto:mh@plxinc.com) | [www.plxinc.com](http://www.plxinc.com)  
40 W. Jefryn Blvd. Deer Park, NY 11729, USA



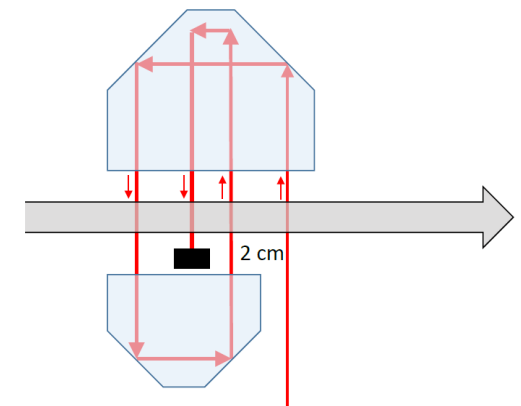
# What We Do: Highly Precise Manipulation of Light



Retroreflector



Lateral Transfer Hollow Retroreflector  
And Periscope (LTHR & LTHP)

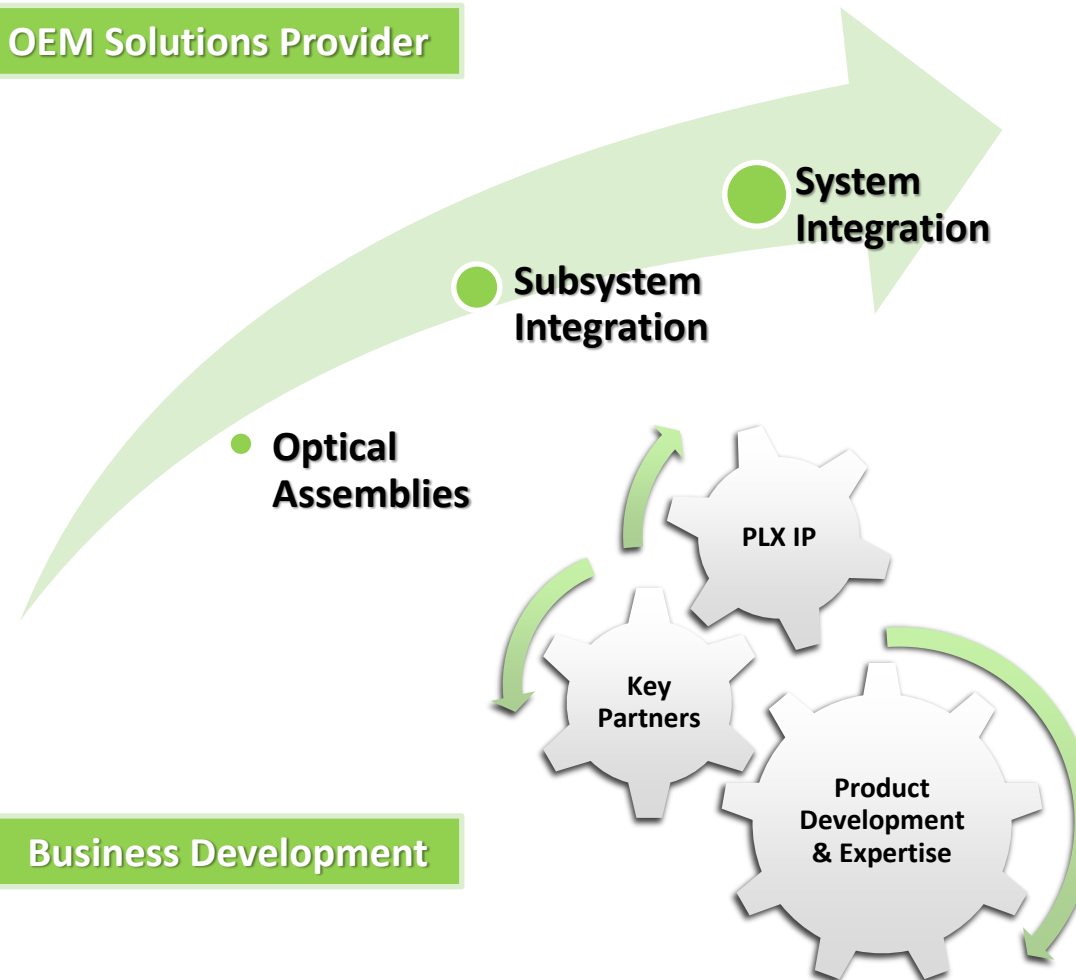


Custom OEM Applications



# PLX Business Model

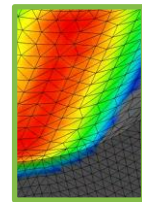
OEM Solutions Provider



Business Development



**Engineering Design**  
• Expert design engineers utilizing PLX 65-years of innovative patented technology



**Analysis & Testing**  
• FEA Analysis of Performance  
• Environmental Testing: Thermal, Vibration, Shock



**Fabrication Shop**  
• Glass Fabrication & Grinding



**Precision Optical Shop**  
• Polishing optics with better than  $\lambda/20$  flatness.



**Assembly Labs**  
• State-of-the-art precision stations for with Zygo interferometers.



**QC/QA**  
• Performance & Environmental Testing, Zeiss CMM.  
• Registered ISO 9001:2015



**Coating Capabilities**  
• Metallic coatings, Anti-Reflective(AR) coatings, and dielectric mirror coatings for all types of optics.

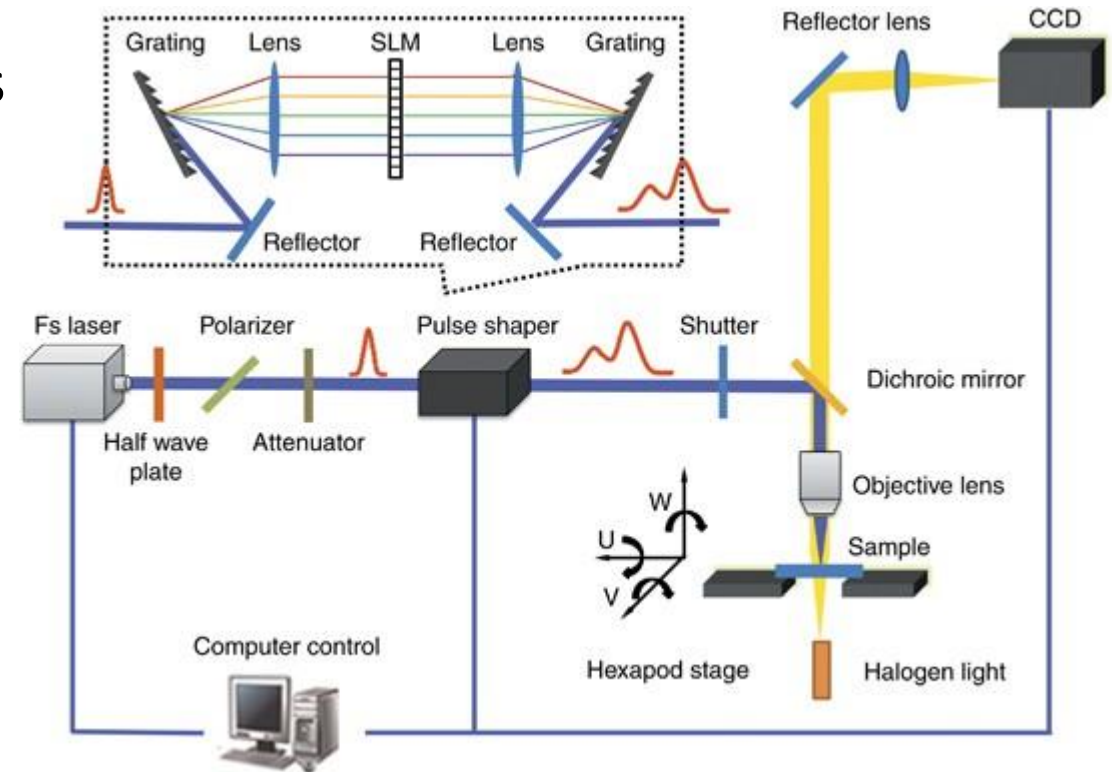
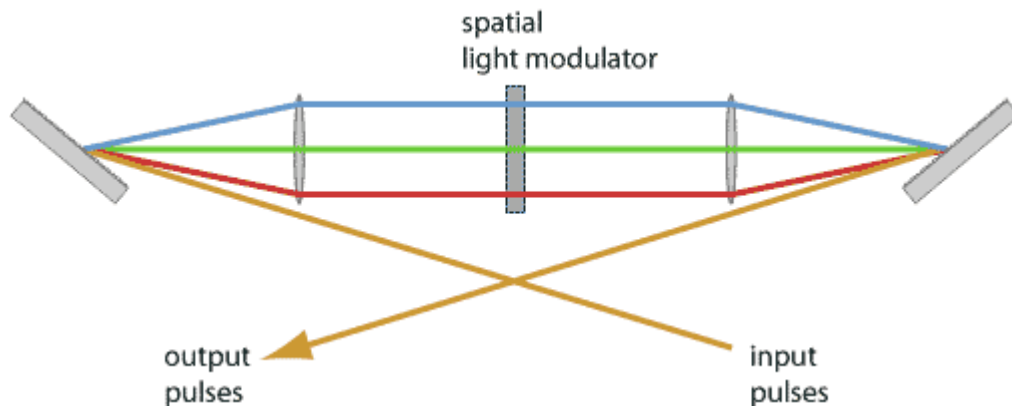


**Clean Room**  
• Class 100 Clean Room



## Beam & Pulse Shaping Utilizing Monolithic Optics

- Utilize any combination of lenses, diffractive elements, reflectors, etc. of all fixed elements in one monolithic structure (M.O.S.T.<sup>TM</sup>)
- Down to sub-arcsecond accuracies
- Stable in thermal & vibration environments





## The PLX Advantage of a Monolithic Approach

### High Accuracy

- Sub-arcsecond beam deviation
- Invariant and monolithic optics

### Configurable

- Combining invariant systems
- Precision integration of multiple assemblies

### Stability

- Thermal Excursion
- Vibration or Shock Concerns

### Component Integration

- Reflectors and/or Lenses
- Diffractive Elements
- Filters / Polarizers

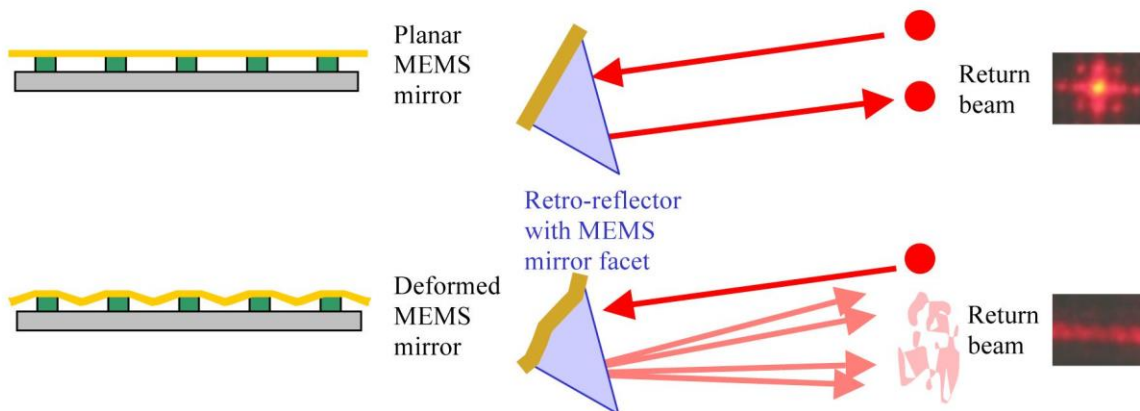
### Structural Design

- Complete Enclosed
- No Alignment



## Opto-MEMS by PLX

- ✧ PLX's development of a custom MEMS Retroreflector in conjunction with MEMS partners.
- ✧ The Modulating Retroreflector (MRR) system has been used in Free Space Optics applications to provide continuous asymmetric free space optical communication at data rates up to 200 Kbps using a binary modulation scheme.



Deformable/MEMS mirror



MMR with PLX Retroreflector



# Shattering the Limits in Innovation

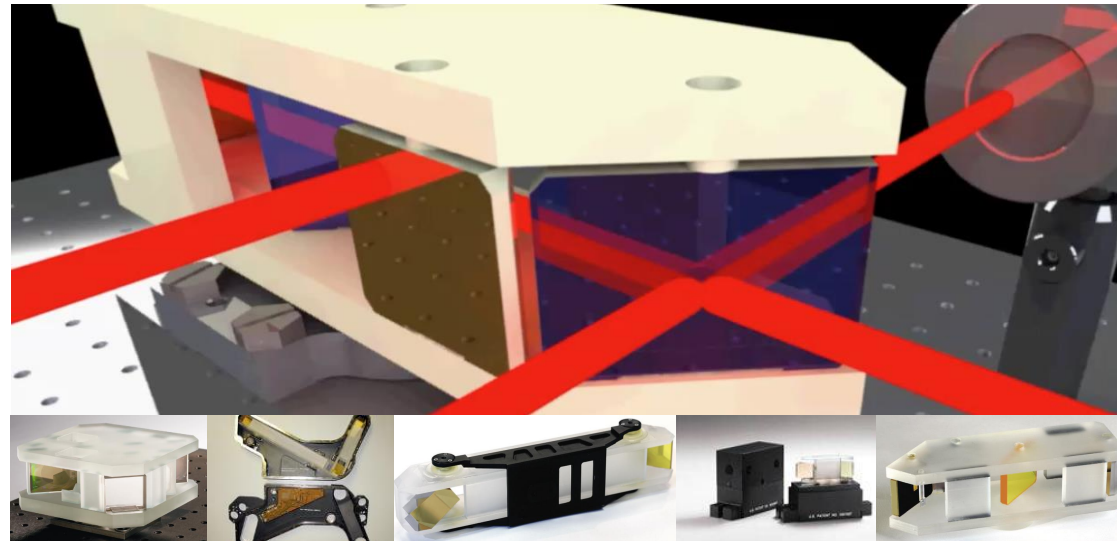


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# INTRODUCING M.O.S.T™

## Monolithic Optical Structure Technology

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US PAT. 10393994, 9013814 and Additional Patents Pending Internationally





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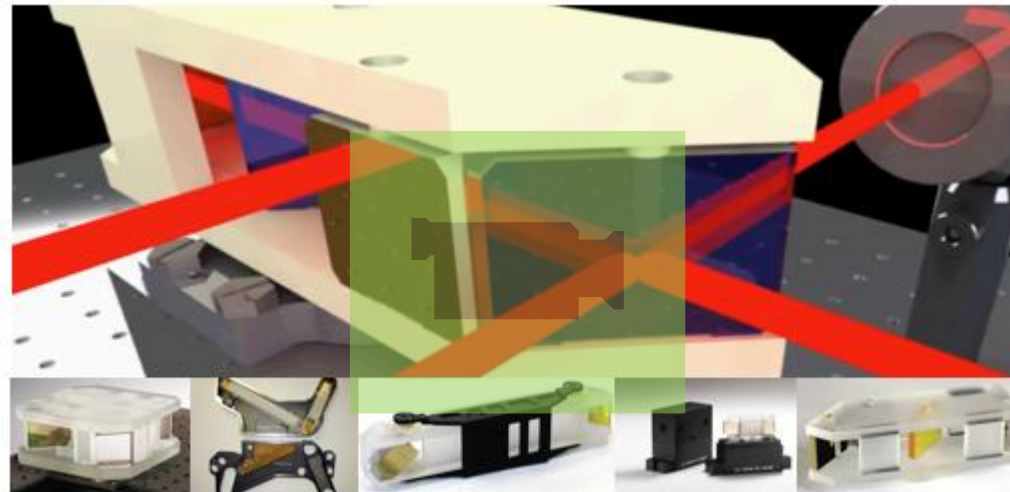
# INTRODUCING M.O.S.T™

## Monolithic Optical Structure Technology

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YouTube Video:

<https://youtu.be/qn5sMYv9KHU>





## M.O.S.T.™ Monolithic Optical Structure Technology

### Advantages with M.O.S.T Technology

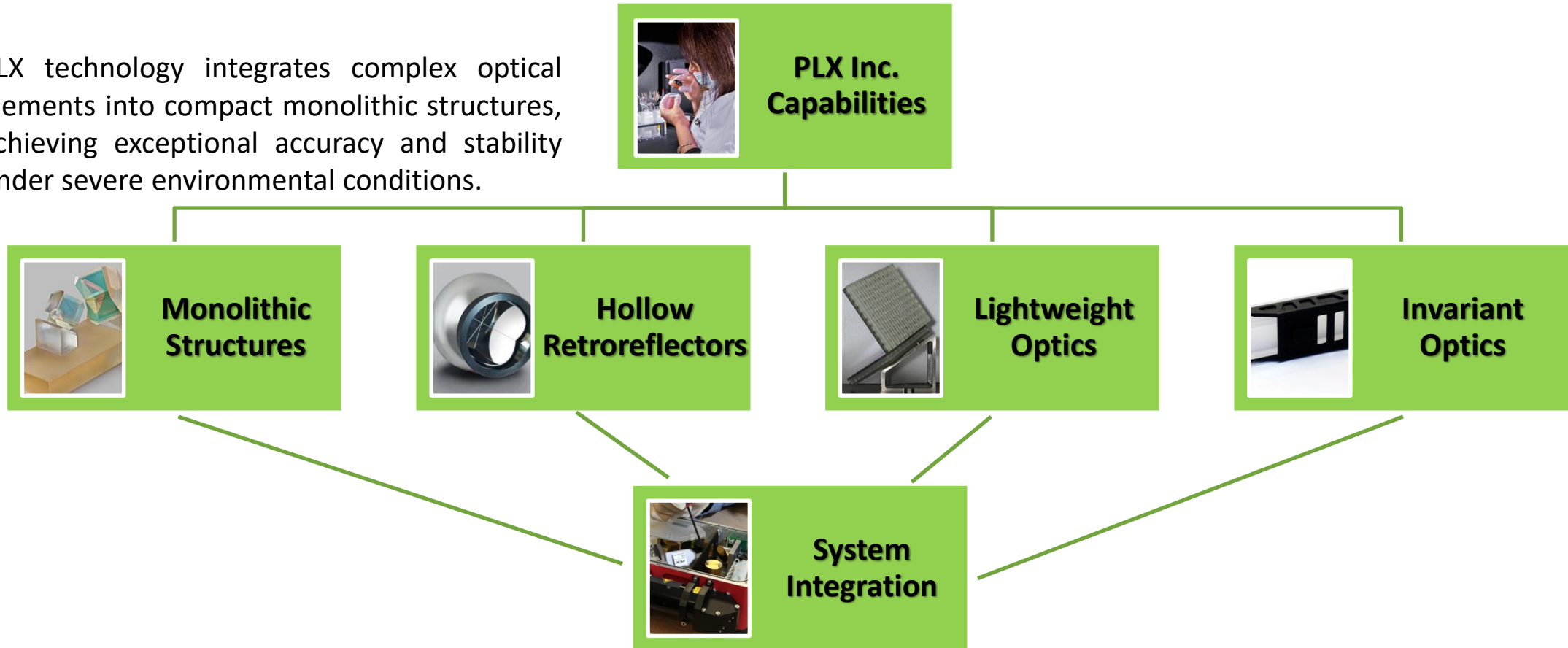
- ✦ Combines all of the elements of a complex optical setup into single rugged monolithic unit.
- ✦ Single Compact & Rugged
- ✦ Superb optical stability, unsurpassed shock and vibration resistance.
- ✦ Sub-arc second accuracy between optical elements.
- ✦ Permanently aligned so you will never need to adjust it and also lasts indefinitely.

M.O.S.T. PROPERTIES	
FEATURES	SPECIFICATIONS
Glass Types Used	Typically fused Silica (SiO <sub>2</sub> ), low-expansion Borosilicate, ULE 7971, BK7 and ceramics
Lightweight Structure	Average glass density is 2.2 g/cm <sup>3</sup> (lighter than Aluminum)
Average Specific Stiffness	3.3x10 <sup>4</sup> N m/g (higher than Aluminum)
Uniform CTE	Coefficient of Thermal Expansion using fused Silica is 0.55 ppm/° K
Thermal Dependency	≥ 0.15% per degree
Oscillation Capability	≥ 1 KHz dependent upon the design and requirements



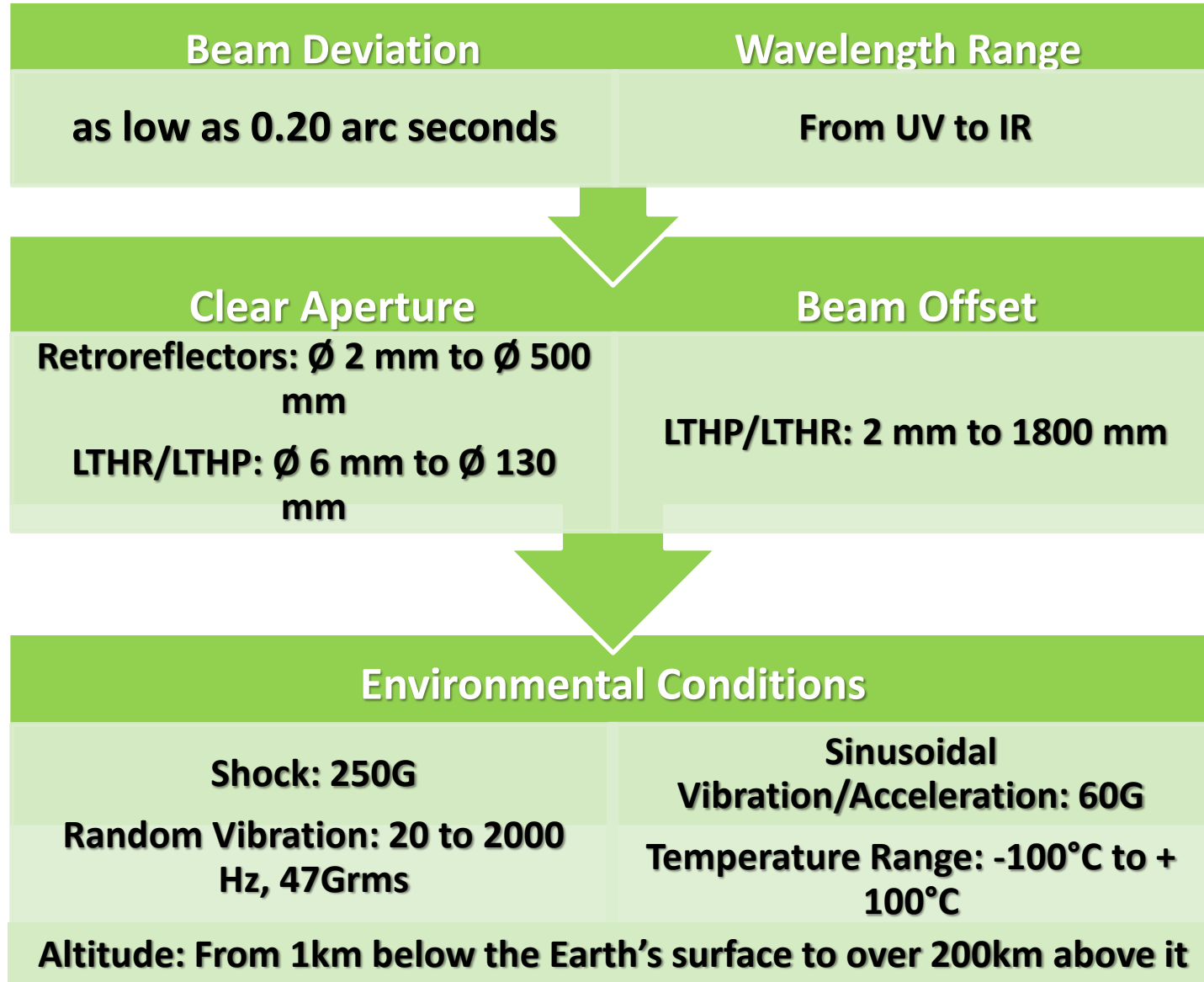
## Getting the M.O.S.T.<sup>™</sup> out of optical systems.

PLX technology integrates complex optical elements into compact monolithic structures, achieving exceptional accuracy and stability under severe environmental conditions.



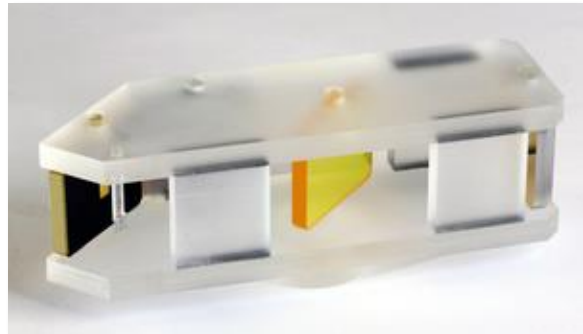
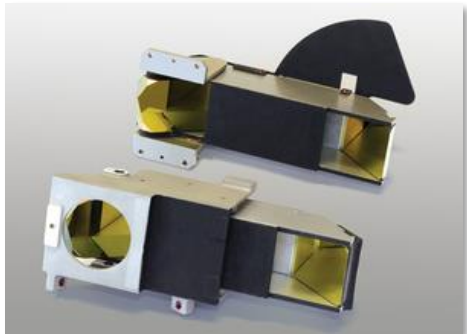
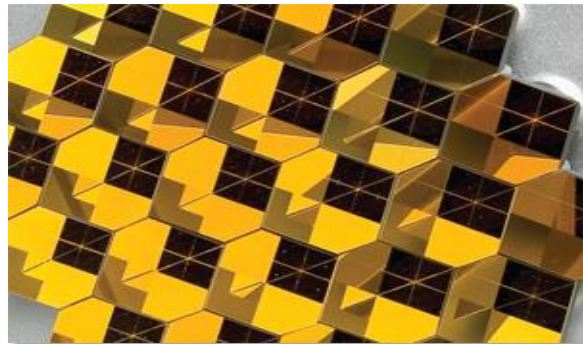
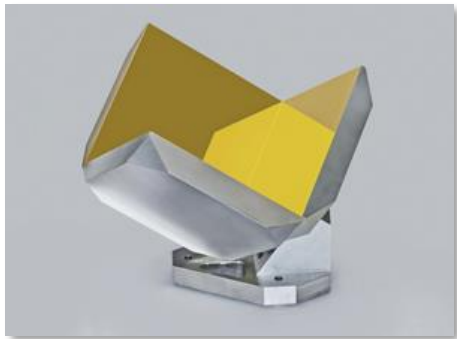


**PLX has delivered assemblies meeting the following performance:**



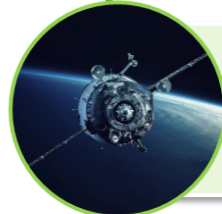


Providing solutions that fit the demands of a new generation of optical requirements for the Defense, Aerospace and Commercial Industries.



**DEFENSE**

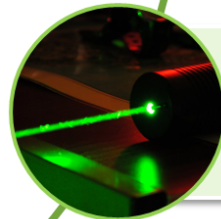
LEONARDO DRS    LOCKHEED MARTIN    GENERAL DYNAMICS  
NORTHROP GRUMMAN  
L3HARRIS™    Raytheon Technologies    BAE SYSTEMS



**AEROSPACE**

NASA    esa    Ball Aerospace & Technologies Corp.  
ThalesAlenia Space    JAXA    MDA  
JPL    AIRBUS

Jet Propulsion Laboratory



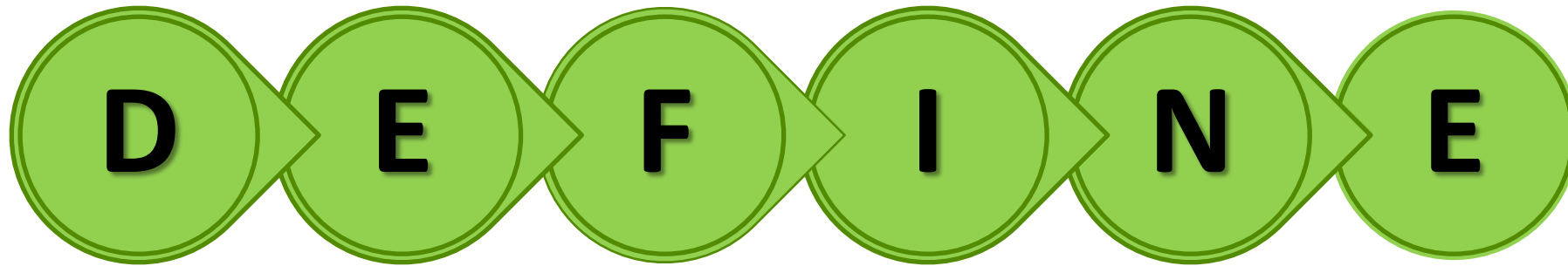
**COMMERCIAL**

BOEING    SPIRIT AEROSYSTEMS®    HUBBS  
BOSTON MICROMACHINES CORPORATION    FARO    OPTICAL TARGETING SPECIALTIES FOR METROLOGY SUPPORT SYSTEMS



**PLX**  
INNOVATIVE OPTICAL SYSTEMS

**... And Infinite Solutions**



**Design   Engineering   Fabrication   Integration   Next-Generation   Enhancement**

**DEFINE** your requirements and we will utilize and adapt our technology to meet your needs

**PLX is Solutions Provider for Precision Optical Assemblies & Integration**

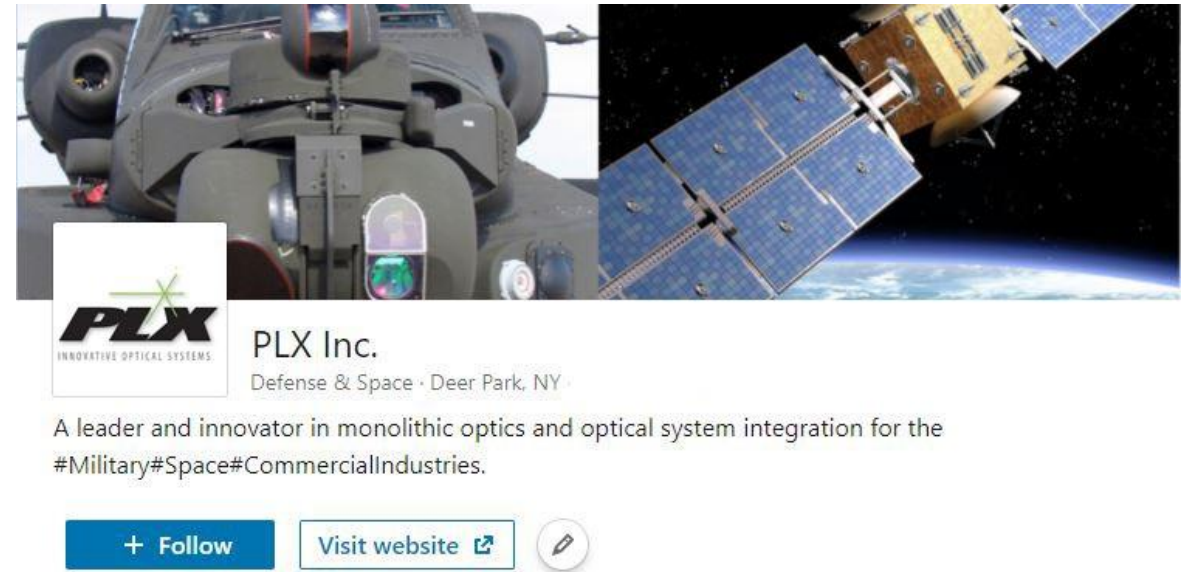
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