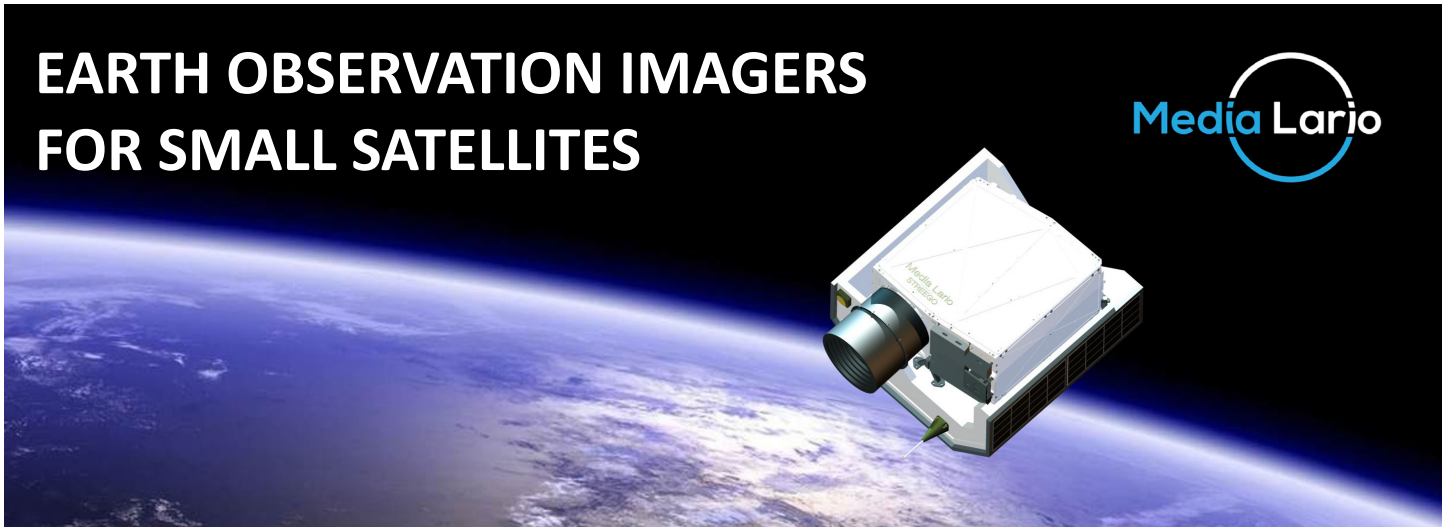
EARTH OBSERVATION IMAGERS FOR SMALL SATELLITES

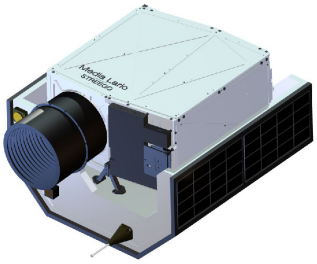


STREEGO is a multispectral Earth Observation payload for small satellites. Its mass and volume are designed specifically to be suitable for the small satellite form factor. The unobscured Three Mirror Anastigmat (TMA) design maximizes MTF at high spatial frequencies. STREEGO offers multispectral imaging, with options for hyperspectral, enabling applications for small satellites previously possible only in large satellites such as the Sentinel-2 class satellites.

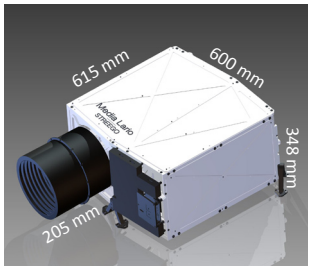
SMALL SATELLITE PLATFORM COMPATIBILITY

STREEGO has been designed onto satellite platforms as small as 50 kg.

Its design provides access to 'piggy-back' launch positions as small as 600 x 700 x 850 mm³ helping to optimise launcher payload efficiency.



STREEGO imager on small satellite platform



Exterior dimensions of STREEGO imager, including interface bipods and MLI cover

At 20 kg mass and 17 W power consumption, STREEGO is suitable for small satellite platforms.

The athermal architecture with CTE-matched aluminium mirrors and structure requires minimum thermal control by the platform.

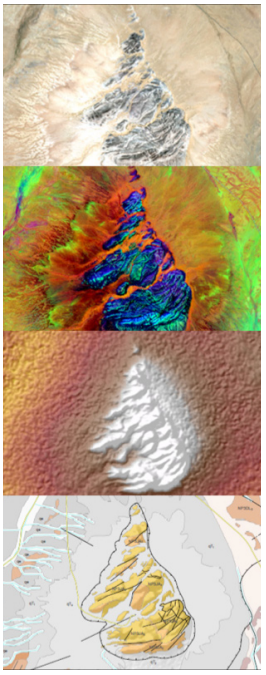
MULTISPECTRAL IMAGING

STREEGO provides multi-spectral imaging with a separate panchromatic channel, as well as hyperspectral options.

The VIS/NIR multispectral bands are the same as Sentinel-2, but with four times sharper resolution. STREEGO imagery can use existing processing infrastructure.

High resolution multispectral imaging enables applications in precision farming, forestry, water monitoring, surveillance and others. Managing crops within fields or tree-level vegetation screening is now possible.

Hyperspectral options are possible with newly developed sensors and integrated linear filters.

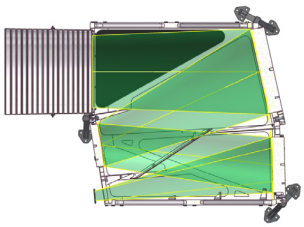


Multispectral imaging for geological mapping (Sentinel-2 ESA/GAF credits)

THREE MIRROR ANASTIGMAT DESIGN

The ∅ 200 mm TMA design provides 2.75 m GSD with a FOV of 2°. The unobscured optics maximize MTF for high spatial frequencies.

The reflective design has no chromatic aberration over the entire VIS/NIR spectral range.



STREEGO imager optical layout

FOCAL PLANE OPTIONALITY

The STREEGO focal plane has been designed with optionality in mind. Customers can optimise the number of bands, swath width and resolution to suit their applications.

	SENSOR	GSD	SWATH
PAN	8 Mpx	2.75 m	up to 22 km
PAN/RGB	8 Mpx	2.75 - 5.5 m	up to 22 km
PAN/Multispectral	12 Mpx	2.75 - 5.5 m	11 km
Hyperspectral	12 Mpx	5.5 | 8.7 | 11 m	11 km

STREEGO PRODUCT RANGE*

	PAN/RGB	Multispectral	Hyperspectral
BANDS	4 bands	9 bands**	150***
GSD	2.75 m	5.5 m	5.5 - 11 m
SWATH	11 | 22 km	11 km	11 km
MTF in orbit	> 15%	> 15%	> 15%
SNR	100	70	70***
OPTICS	TMA ∅ 200 mm - F/6		
ARCHITECTURE	Aluminium		
SENSOR	CMOS		
PX SIZE	5.5 µm		
VOLUME	615 x 600 x 348 (h) mm^3		
MASS	20 kg		
POWER	17 W		

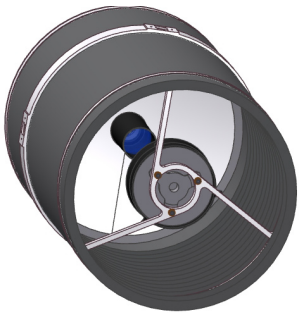
* Specifications for 600 km orbit
** Includes an additional panchromatic channel at 2.75 m GSD
*** A reduced subset of HS bands can be dynamically selected for download

CUSTOM IMAGERS

Custom designed and manufactured EO imagers are available from Media Lario.

Designs can incorporate varying aperture sizes as well as optical components made with CTE-matched aluminium alloys or more traditional ZERODUR® glass optics.

Imagers can be manufactured and assembled in Media Lario in ISO 6 cleanroom environment and shipped to customer for integration.

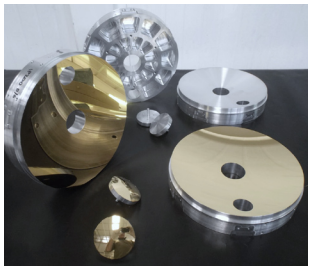


Design of a Ritchey-Chrétien EO imager in ZERODUR®/CFRP

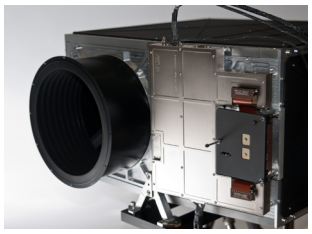
REPLI-FORMED OPTICS™

Media Lario has pioneered the development of short production time optics suitable for high specification, high volume applications.

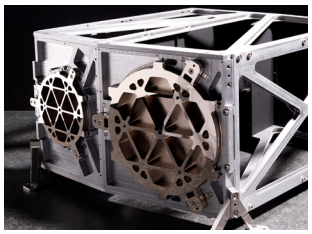
Repli-formed Optics™ have 1 mirror-per-day production throuput or greater; also available with light-weighting, optical pass-through and other custom features.



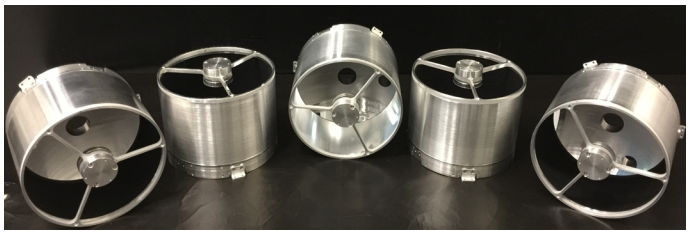
Repli-formed Optics™



Front view of STREEGO showing aperture, focal plane and on-board electronics



Rear view of STREEGO showing primary and tertiary optics



Repli-formed Optics™ in Ritchey-Chrétien telescopes for optical communication

ABOUT MEDIA LARIO

Media Lario S.r.l. is a dynamic and innovative technology-driven company supplying advanced optical components and optical systems. The company works with agency partners such as ESA and NASA and leading aerospace companies. The company is located in the industrial hub of Milan, Italy, and very near to picturesque Lake Como.

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