

# MAX

FLIGHT SOFTWARE

MISSION READY SPACE SOFTWARE

MAX (Modular, Autonomous, eXtensible) Flight Software is a fully customizable flight software suite that provides the foundation for your complex space mission from day one.

REDUCE COST WITHOUT COMPROMISE

MATURE

150+  
CUMULATIVE  
YEARS IN SPACE

VERSATILE

DESIGNED WITH ALL  
SPACECRAFT, OPERATING  
SYSTEMS AND  
PROCESSORS IN MIND

FLIGHT-PROVEN

50+  
SUCCESSFUL  
MISSIONS



LEO

MEO

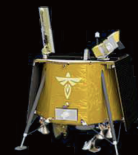
GEO



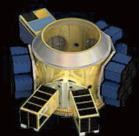
INTERPLANETARY



SATELLITES



LANDERS



OTV'S +  
RPOD

spacesystems@rocketlabusa.com  
rocketlabusa.com



# C++ FRAMEWORK

**Configurable C++ objects form the building blocks of MAX.**

A wide range of essential services compliment the object-oriented framework including:



Time Management  
Watchdogs  
Event Reporting



Fault Protection  
Intelligent Sequencing  
Autonomy



Command and Telemetry  
File Management  
Hardware I/O

## DESIGN

MAX has a common architecture for reusability and algorithm applicability so you can meet your budget, timeline, and focus on the unique aspects of your current mission.

## COMPATIBLE HARDWARE & OS

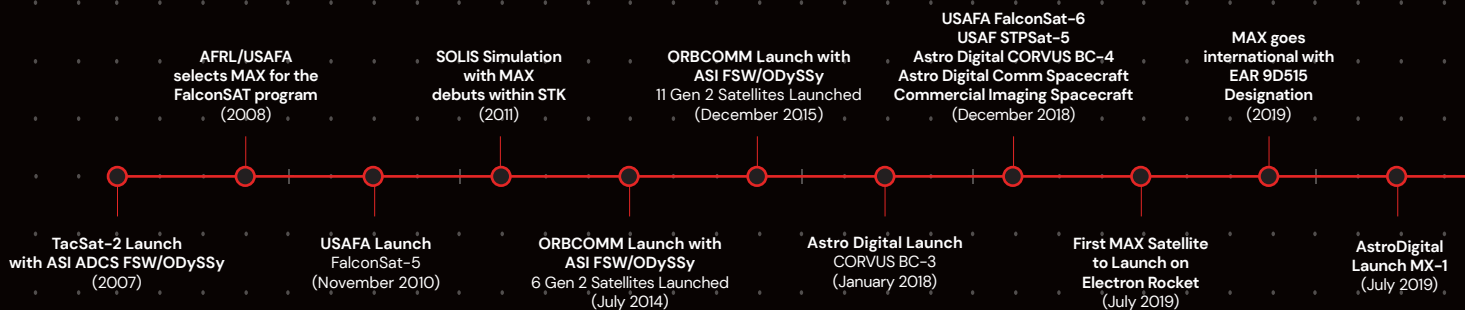
**OS:** VxWorks (5.x to 7.x) | Linux (several versions) | RTEMS | FreeRTOS | Windows 7, 8 and 10

**Processors (Partial List):** PPC G4 | PPC 750 | PPC 440 | Freesacle 8548

LEON3 UT700 | LEON3 GR712RC | Intel x86 | ARM Cortex A7, A8 and A9 (including Xilinx Zynq)

8-Core ARM v8.2 64-bit | 512-core Volta

## MAX HERITAGE



# GNC CAPABILITY

MAX contains proven flight and simulation configurable components for:



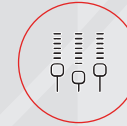
## GUIDANCE

- Pointing & Slewing
- Targeting & Scanning
- DeltaV Engines
- Rendezvous & ProxOps
- Orbit Propagation



## NAVIGATION

- Attitude Determination
- Orbit Determination
- GPS Rcvrs & IMUs
- Magnetometers & Sun Sensors
- Star Trackers



## CONTROLS

- Attitude Control
- Momentum Control
- Magnetic Torquers
- Reaction Wheels
- Thrusters & Tanks



### BUILD CUSTOM COMPONENTS

Rapidly auto-generate custom C++ software via Intelligent XML Schema



### ONBOARD DYNAMIC SIMULATION SYSTEM

Closed-loop simulation of the spacecraft portable for both design and test



### POWERFUL SEQUENCE ENGINE

Autonomous Operations  
CONOPs Development  
Configurable Fault Protection

Commercial Imaging  
Spacecraft Launched  
(August 2019)

2 Commercial Imaging  
Spacecraft Launched  
(August 2020)

Commercial Imaging  
Spacecraft Launched  
(March 2021)

MAX Autonomy Debuts  
Mission Ops Center  
Operational  
(June 2021)

2 Commercial Imaging  
Spacecraft Launched  
(December 2021)

USAFA FalconSat-8  
Boeing ART-2  
Astro Digital Palisade  
(May 2020)

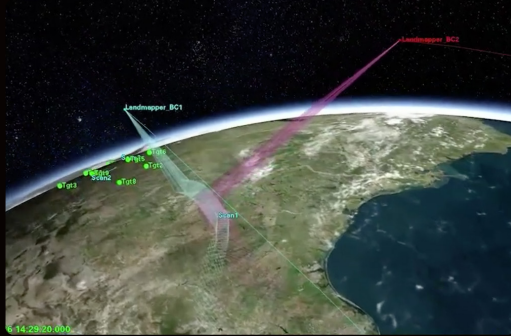
DARPA Launch  
Mandrake-1  
(November 2020)

DARPA Mandrake-2 Able & Baker  
Commercial Tech Demo Spacecraft  
Astro Digital Shesha & Tenzing,  
Commercial Hosted Payload Spacecraft  
Spaceflight Sherpa LTE-1  
(June 2021)

Commercial Imaging  
Spacecraft Launched  
(November 2021)

First Interplanetary  
Mission  
(2022)

# MAX SPACE SOFTWARE SUITE



SOLIS is a spacecraft simulation tool within STK to configure and analyze spacecraft and mission ConOps powered by MAX and ODySSy.

MAX GDS provides rapid integration of the ground software segment to operate spacecraft, testbeds, and simulations.

## COMPLETE MISSION LIFECYCLE



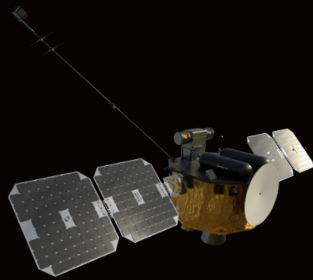
SOLIS configures MAX and ODySSy to model & analyze within the STK mission environment.



Flight and simulation software is rapidly designed with DevTool.



MAX GDS and FlightJAS Sequencer enable command & operation with rich visualizations.



MISSION CONCEPT DEVELOPMENT  
SPACECRAFT DESIGN  
INTEGRATION & TEST  
OPERATIONS

