The Navigation Package for Earth Observation Satellites (NAPEOS) is a generic flight dynamics package developed to support primarily ENVISAT but aiming at a broader spectrum of Earth orbiting missions. The implementation of NAPEOS was started under ESOC contract at the end of 1995. Since then NAPEOS has undergone a number of transformations and enhancements that have consolidated this software package as a very good starting point for the implementation of any flight dynamics system.

GMV as one of the main contributors to the development of NAPEOS has taken the lead in its use as the core system for the implementation of other flight dynamics systems. To undertake this activity a close relationship with ESOC has been established in order to harmonise the different NAPEOS versions and to improve the portability of the software to different platforms, operating systems and compilers. At present NAPEOS can be compiled and run on practically any UNIX like platform and with minor limitations in MS-Windows based platforms.

NAPEOS can now be considered as a portable infrastructure and portable flight dynamics core. With this major advantage, the implementation of new flight dynamics systems limits to the generation of the mission specific aspects of the system and the adaptation of interfaces. In this respect NAPEOS also provides clean and well organised interfaces that can be directly exported by the flight dynamics subsystem with minimal format adaptation. It is also important to mention in this respect the flexibility of NAPEOS in accepting a high number of formats for different data types for tracking, satellite ephemeris files, etc.

Very positive experience has been gained in the implementation of the flight dynamics facility for the EUMETSAT Polar System. The core of NAPEOS has been used with basically no modification. The inclusion of new functionality and mission specific elements has been performed with minimum impact in the existing software. This approach in which the NAPEOS core modification are kept to a minimum and in non-critical parts of the software have contributed to a strong reduction in project risks and in the validation effort.

GMV has initiated an internal activity to incorporate the NAPEOS computational layer into the focusSuite® infrastructure. focusSuite® is a generic infrastructure that provides advanced data management, man-machine interface design and graphics capabilities. A prototype of focusLEO, the LEO implementation of focusSuite®, has been produced in an attempt to identify the benefits of the association and the difficulties in the adaptation of focusSuite® to existing flight dynamics packages. The first operational implementation that should benefit from the experience gained in the implementation of this prototype is the GSTB-V2 flight dynamics system.