

54th Session of the Scientific and Technical Subcommittee (STSC)
UN COPUOS
Vienna, February 9, 2017



SAPIENZA
UNIVERSITÀ DI ROMA

***The Space Research Projects of “La Sapienza”
University of Rome in the framework of the
Agreement with the Italian Space Agency (ASI).***

Paolo Gaudenzi

University of Rome «La Sapienza»

The roots for scientific cooperation

Italy and Kenya have a long-lasting cooperation that dates back to the '60s , when an Italian professor, **Luigi Broglio** of the University of Rome “La Sapienza”, suggested to settle launch and control platforms in front of the Malindi town developing the **San Marco space cooperation Project** with Kenya for peaceful purposes.

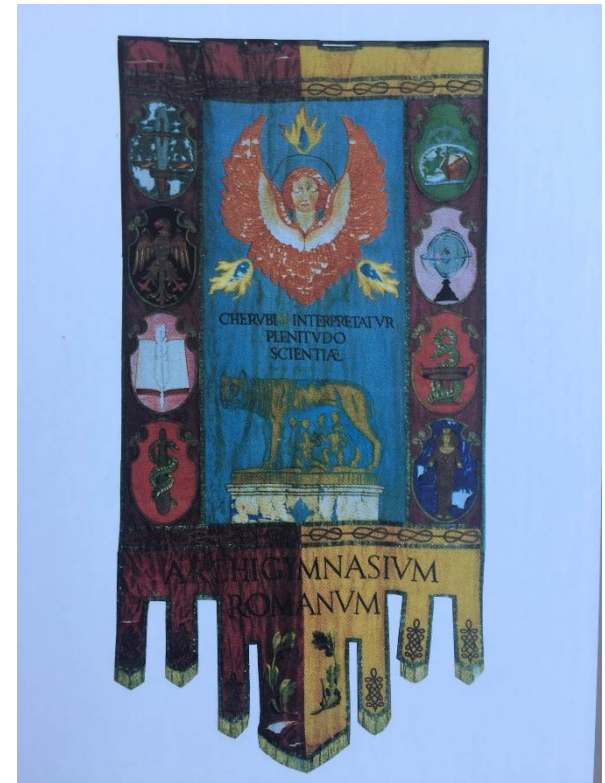
Currently the Broglio Space Center is managed by the **Italian Space Agency (ASI)** in cooperation with Kenya government.



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ASI and Sapienza University have recently signed a general framework agreement. **The purpose of the Agreement is to give the possibility to Italy and Kenya, to jointly develop new high level scientific and technological research and prepare young researchers.**





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Cooperation research lines defined in the agreement (as approved by ASI on 25/7/2016)

RESEARCH AND TECHNOLOGY DEVELOPMENT

Radar systems and sensors for space sciences

*Tracking and acquisition of orbital motions of satellites
and of launching campaigns*

Space propulsion and micro satellites

Space debris

Materials and structures including additive manufacturing technologies



Cooperation research lines defined in the agreement (2)

EDUCATION

High education programmes with Kenyan Universities

SPACE APPLICATIONS AND SERVICES

Telemedicine

Remote sensing for environmental studies

SPACE LAW



ON GOING PROJECTS

Equatorial Italian Observatory for space debris (EQUO).

Implementation of a space remote system for the monitoring of harvest and agriculture applications(SBAM).

Italian-Kenyan University Nanosatellite (IKUNS)

ARISC: Remote informative system to support integrated coastal management action plan in Kenya

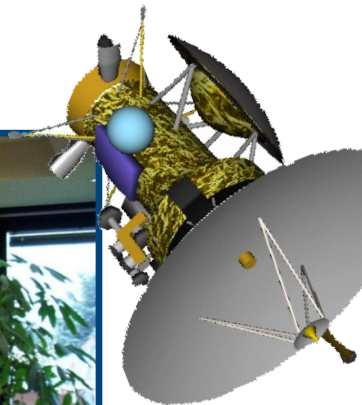
EXAMPLE OF FUTURE PROJECTS

***High education master programmes
Technology: Additive manufacturing***

HIGH EDUCATION: The Professional Masters of La Sapienza in the Space field sponsored by ASI

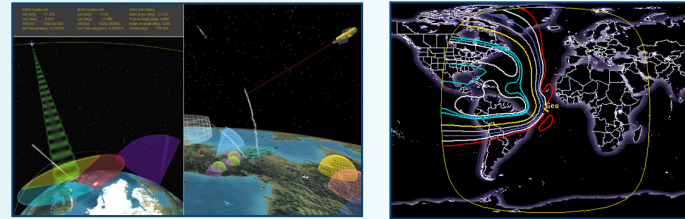
The need of top level education for **science and technology** but also for developing **professional competences to operate space activities**.

For this reasons ASI has recently sponsored for a three years period the Sapienza **Masters in Satellites** and in **Space Transportation systems** and for the present year the **Space Mission Design and Management** offered by the DIAEE department of our University.

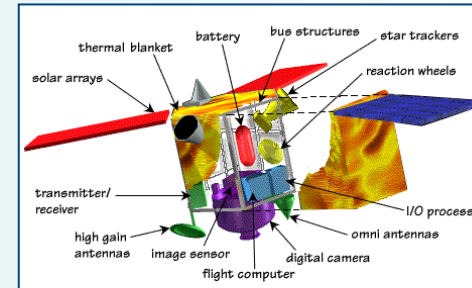


HIGH EDUCATION: Master in Space systems and services

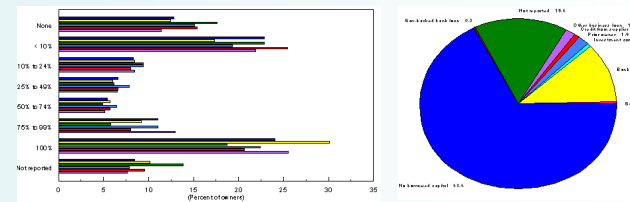
Space services and applications i:
UniRoma, Telespazio, Thales Alenia Space



The satellite system
UniRoma, Brown University, Skoltech



Space business and management
ASI, ESA, Thales Alenia Space



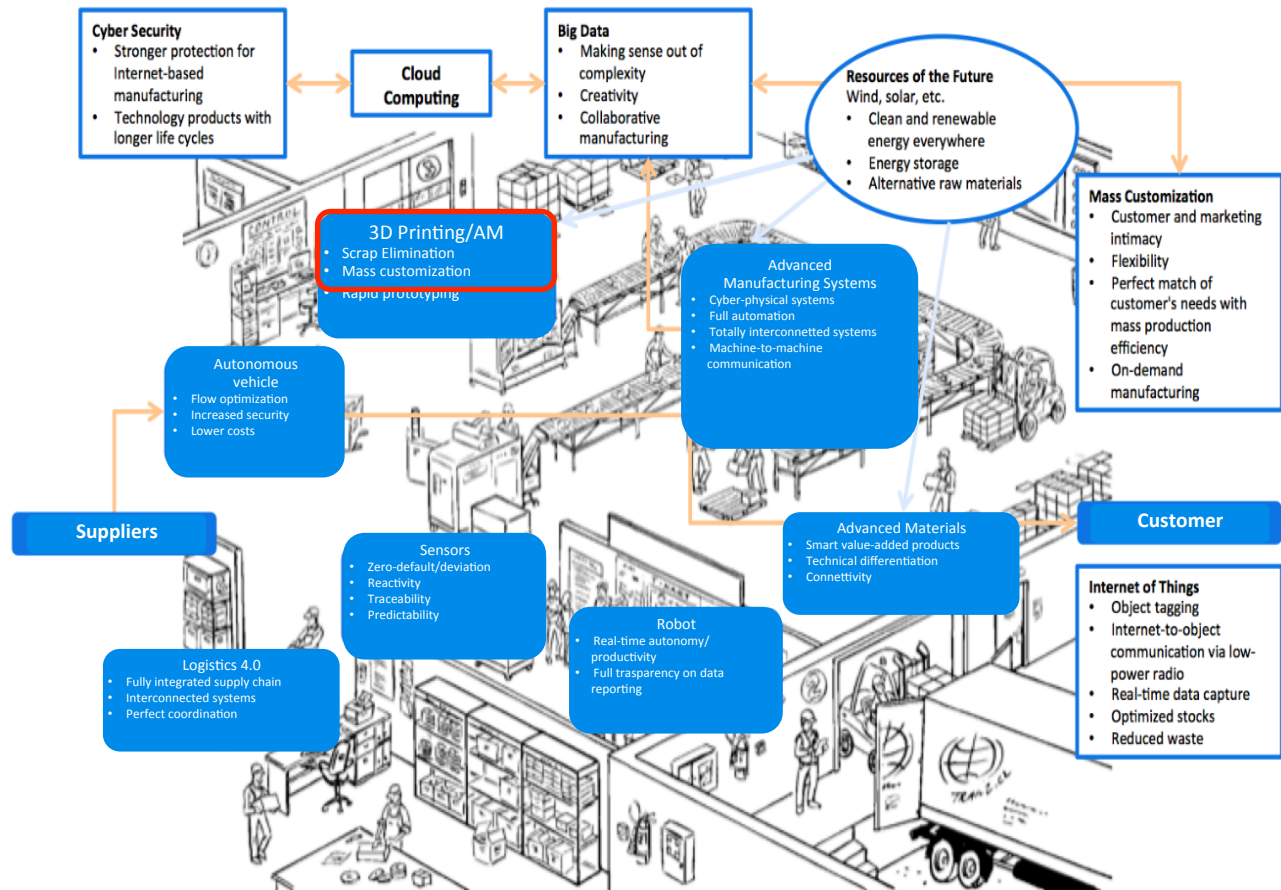
TECHNOLOGY: Additive Manufacturing

Additive manufacturing: processes that allow to construct 3D components based on a 3D digital model, by progressive layer by layer deposit and treatment of the material.

It represents a bridge between digital reality and real life by redefining:

- manufacture,
- design,
- logistics,
- business models.

A possible case of transverse technology.

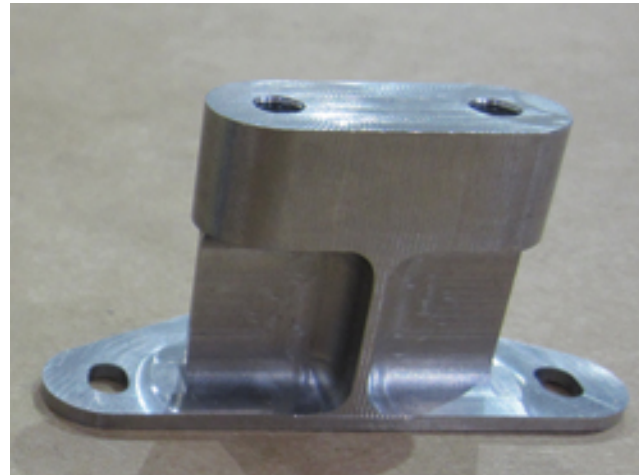


TECHNOLOGY: Additive Manufacturing

New on board mechanical components being developed.



Ultra stable bracket (OHB System AG)



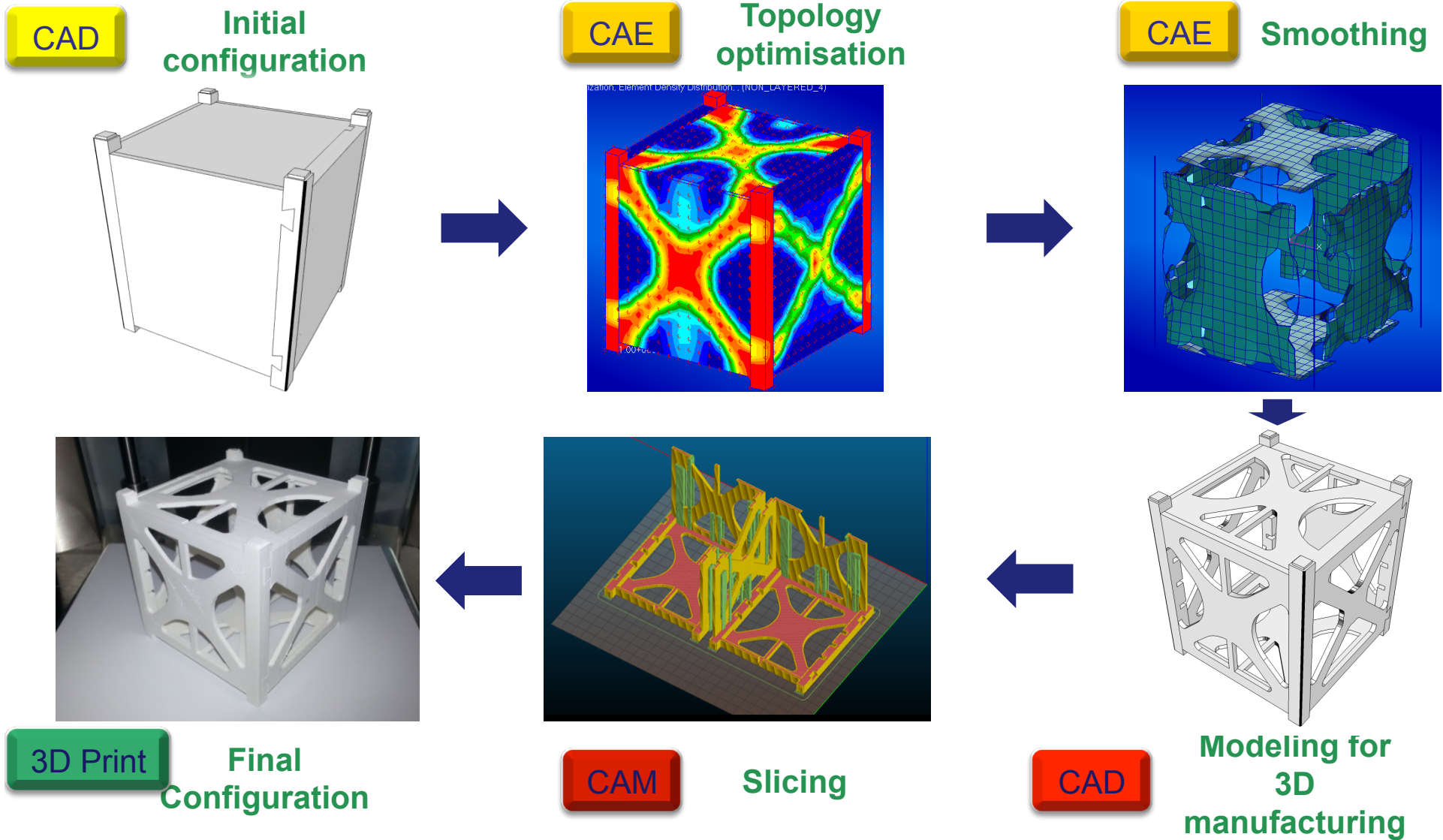
A 3D-printed bracket onboard the Juno

Juno waveguide bracket (Lockeed Martin)



TMTC Bracket (Airbus DSL UK)

Digital design process of additive manufacturing



Future perspectives

The University of Rome La Sapienza is eager to **reinforce existing international partnerships** and develop **new cooperations in the space field** for the benefit of **new generations**, for reaching new science and technology outcomes and for the development of a new **space economy** that will generate useful services for the benefit of all citizens and of the economic growth.

The ASI/Sapienza agreement was the **enabler of consistent and inspiring new cooperative ventures** for research, education and technology development and exploitation in the Broglio Space Center in Malindi, Kenya.

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