

THE INTEGRAL PROJECT: HISTORICAL OVERVIEW

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About my research project

Main area: Space Diplomacy

Research title: Soviet space program and international collaboration during perestroika

Main aim: determine the role of scientific and commercial co-operation in space in the dynamics of Soviet-Western relations

Sources: Documents from the Historical Archives of the European Union (HAEU, Florence, Italy), NASA Archives, INAF Frascati and Milan Collections, interviews, Soviet, European, and American free press, and memoirs published sources.

Grants: Horizon 2020, PRIN 2017, Dpt SPGI grant, PRIN 2022.





Integral: multi-factor analysis

Historical context: the difficulties of the ending of the Soviet Union, its collapse, and the “roaring nineties” in the new Russia;

Intra-Western issues related to the development of both the ESA space program and its American partner;

Intertwining of political, economic, scientific, organisational, and human factors.

Historical overview

Gamma-I observatory: Franco-Soviet project with Italian star sensor.

Spektr-RG: Soviet project with British and Italian (MART-LIME) participation.

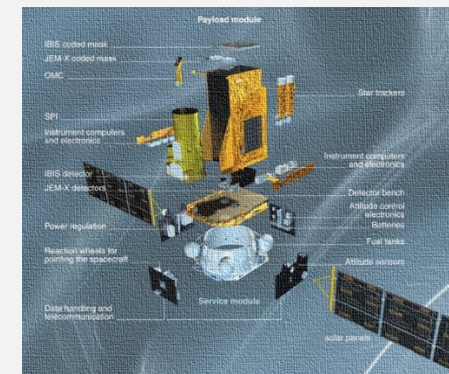
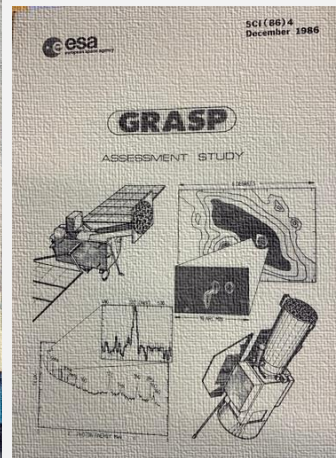
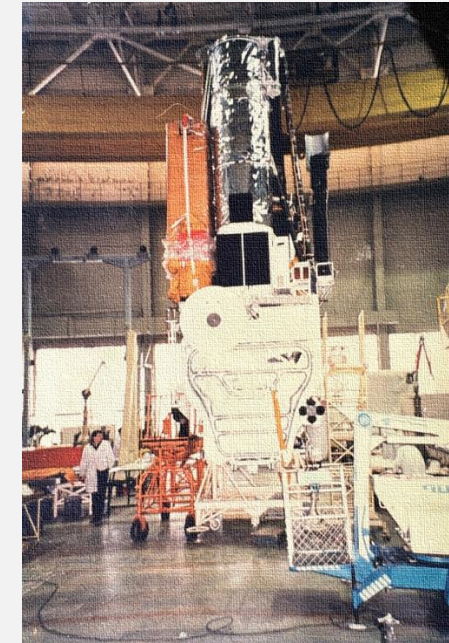
GRASP (Gamma-Ray Astronomy with Spectroscopy and Positioning) period: 1988-1991

INTEGRAL as European-U.S. project in 1989.

In 1993 INTEGRAL became the **second Medium-sized Mission** within the framework of the ESA Long-Term Programme “Space Science: Horizon 2000”

The **U.S.** and **U.K.** sides **withdrew** from the project.

Final shape: **IBIS** (Italy, France), **SPI** (France, Germany), **JEM-X** (Denmark), **OMC** (Spain).



USSR (Russia) steps in

July 12-13 1990: at ESA-IKI meeting proposal to exchange **data against Proton**;

After **Granat** mission no other means to obtain scientific data;

Search for the payload for **Energia rocket**;

Technical advantages of **Proton**;

Personal aspects

Why **just** rocket?

ЕЖЕГОДНОЕ СОВЕЩАНИЕ ЕСА - ИКИ
12-13 июля 1990 года

ANNUAL SESSION ESA - IKI
July 12-13, 1990

МОСКВА
MOSCOW



Why just rocket?

- 1 “The instruments were already defined and designed”;
- 2 The serious gap in Soviet space science between theoretical and experimental astrophysics. “The IKI did not have the means to produce its instrument”;
- 3 This required compliance with ESA standards, which differed in many respects from the Soviet-Russian standards;
- 4 The competition for funding was very high;
- 5 Fear for competition for funding among European equipment developers;
- 6 Russian scientists gained access to advanced scientific data, which satisfied that part of the scientific community that favoured the "rocket for data" formula



ESA reaction

No immediate interest from European side:

Project in **phase of definition**;

Ariane launcher available;

CoCom restrictions: no U.S. instruments aboard Soviet rockets;

Soviet Union at the end of the Soviet era was a highly **unpredictable** and **unstable** state.

Role of geopolitics

Gradual political **stabilization** in post-soviet Russia;

The **Gore–Chernomyrdin Commission**, or U.S.–Russian Joint Commission on Economic and Technological Cooperation (1993);

ESA's financial difficulties;

In 1995 Khrunichev centre (Proton manufacturer) formed a joint venture with Lockheed Martin, the U.S. aviation group, to market their satellite services.



INTEGRAL and the turbulent 1990s

Free launch but payment for **modifications** of Proton and **adaptation** to INTEGRAL (10 mln \$);

Internal Russian problems (IKI-RAS-RSA-NPO Energia-Khrunichev center);

Uncertainty in the **provision of Proton**;

Uncertainty in Proton **new version** (failures and delays);

Bureaucratic obstacles to signing a contract:

the confusion of Russian administration;

legislative drafting;

political instability (1996 – presidential elections).



New version Proton M with Breez M

CONCLUSION

Scientific mission with a strong **political impact**;

Political, economic, technical, and personal **reasons** for ESA-Russian collaboration;

Convergence of European **democratic traditions** in science with Russian reality: Integral Science Data Centre in IKI;

Development and deepening of mutual **trust** between the two parties;

The scientists played a "stabilizing" role in that period, contributing to the construction of new **West-East bridges**.



**THANK YOU
FOR ATTENTION**