Piggyback Launch Opportunities for Small Spacecrafts to Low Earth Orbit

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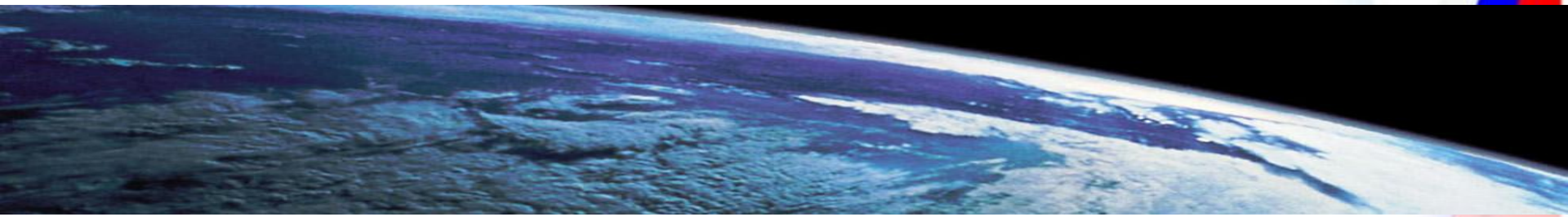
Contents

Speaker: Arnold Sterenharz



Overview of ECM Office

ECM Office is an independent spin-off company of TU Berlin. It was founded in Berlin in January 2008 and it provides an activities in the fields of innovation small satellite technologies.

Tasks:
Engeneering, management of education and research projects
Thematic fields:
Space, enviroment, training and education

Ongoing projects

FP 7
- „SEOCA“ - GEO capacity building initiative in Central Asia
- „MEDEO“ - Methods and Tools for dual access to the EO databases of the EU and Russia
- „POP-DAT“ - Problem-oriented Processing and Database Creation for Ionosphere Exploration

TEMPUS
- „NCR“ - Neues Curriculum in Raumfahrttechnik"
- „CRIST“ - Curricula Reform in Space Technology in KZ, RU, UA
- „PROMENG“ - Practice oriented Master Programmes in Engineering in RU, UA and UZ

Erasmus-Mundus
- „MANECA“ - Mobility Academic Network between EU and Central Asia

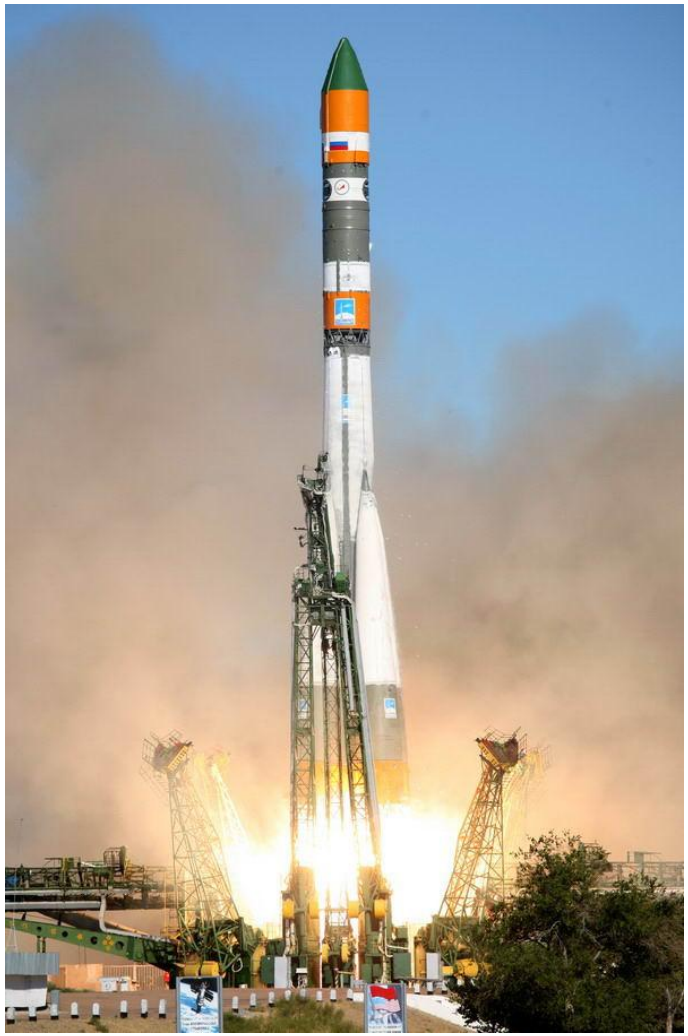


Foto source : http://www.samspace.ru/

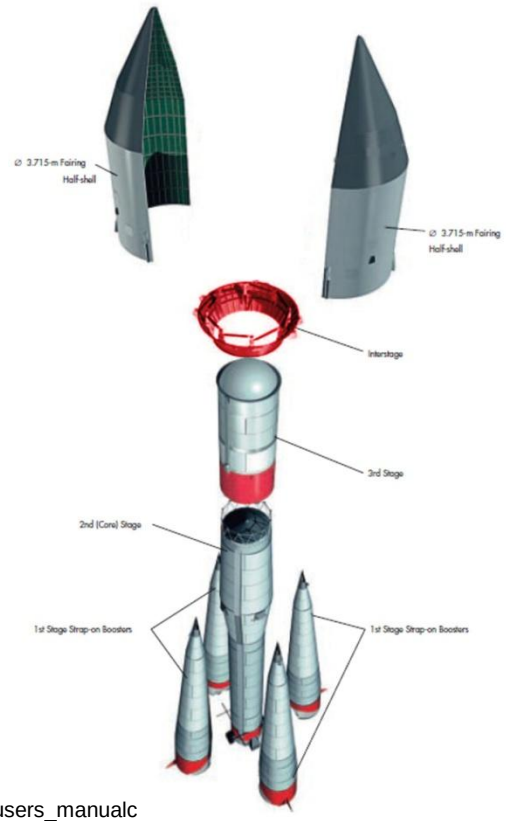
The launch opportunities for small satellites in the low earth orbit on the SOYUZ launch vehicle.

The ECM office in cooperation with Samara Space Centre – the developer and operator of the "SOYUZ“ launch vehicle under support of German and Russian space agencies offers the piggyback launch opportunities for small satellites and satellites complying with the CubeSat standard.

Types for piggyback launch

Option I

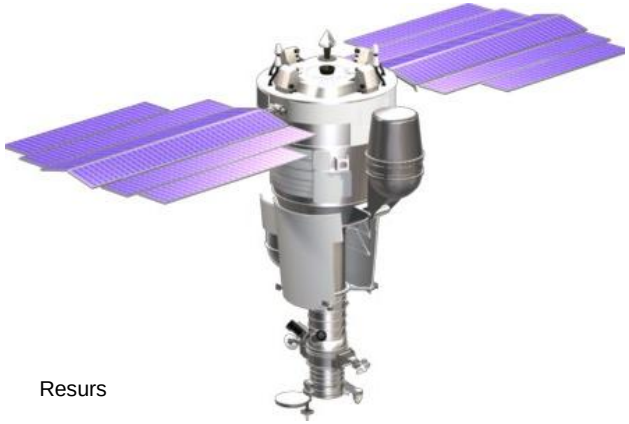
Integration on the Interstage



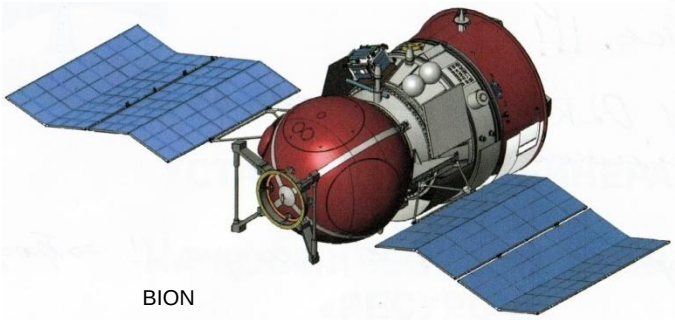
source: soyuz_users_manualc

Option II

Integration directly on the main payload (Satellites: Resurs-P, BION)



Resurs

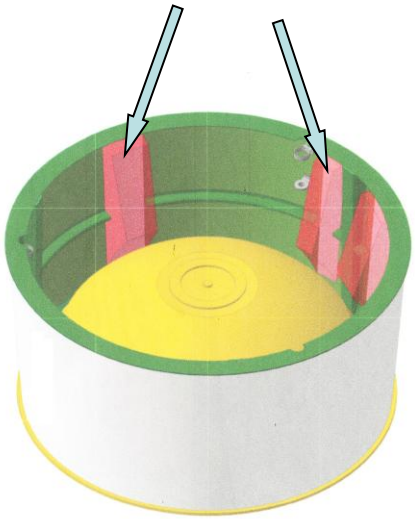


BION

Option I

Integration on the Interstage

Possible order of the sputum container



Intermediate section of the third stage of SOYUZ

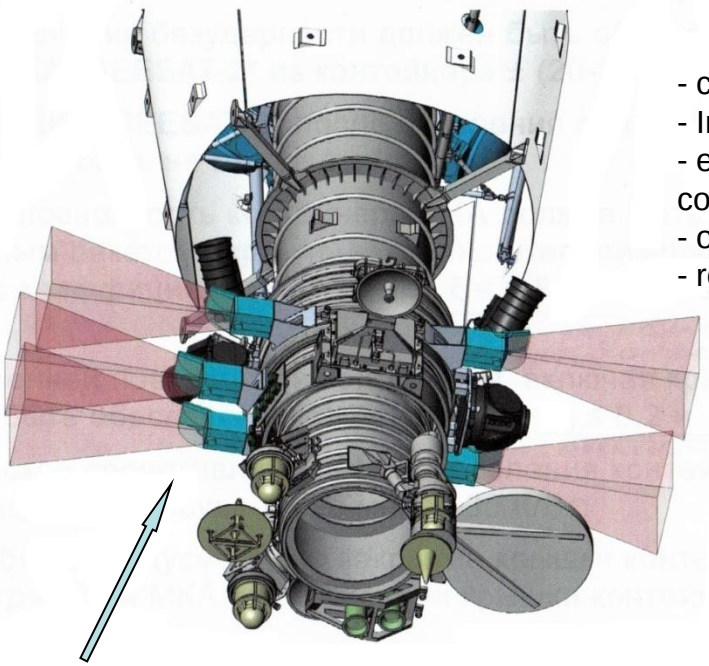
- elliptical orbit, Perig. approx. 200-250 km,
  Apog. approx. 500-600 km
- Re-entry after approx. 3 months for 1kg CubeSat's
- regular launch possibility approx. once a year
- suitable for special experiments

Orbit form

Option II

Integration directly on the main payload

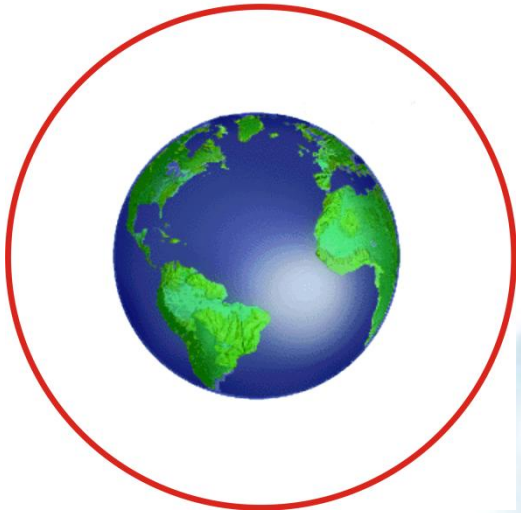
(Satellites: Resurs, BION)



Possible order of the sputum container

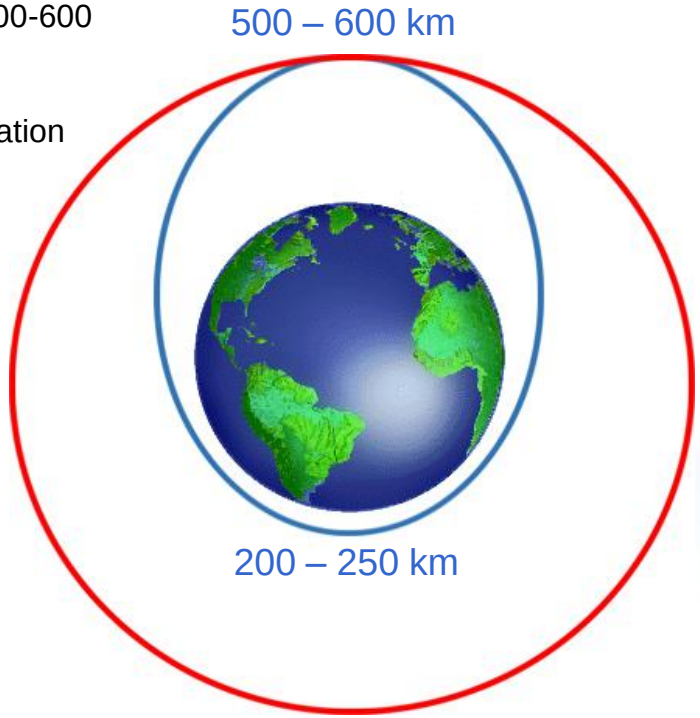
- circular orbit (approx. 500-600 km)
- Inclination> 60 °
- enlarged demands for sputum container
- orbital flight minimum 1 year
- regular launch possibility

Orbit form



Summary

- circular orbit (approx. 500-600 km)
- elliptical orbit (Perig. approx. 200-250 km, Apog. approx. 500-600 km.)
- Inclination> 60 °
- Observance of the code of Conduct for Space Debris Mitigation
- orbital flight from 3 months up to several years
- regular launch possibility approx. 1 per year
- complete winding up of launch preparation



Vielen Dank für Ihre Aufmerksamkeit!

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