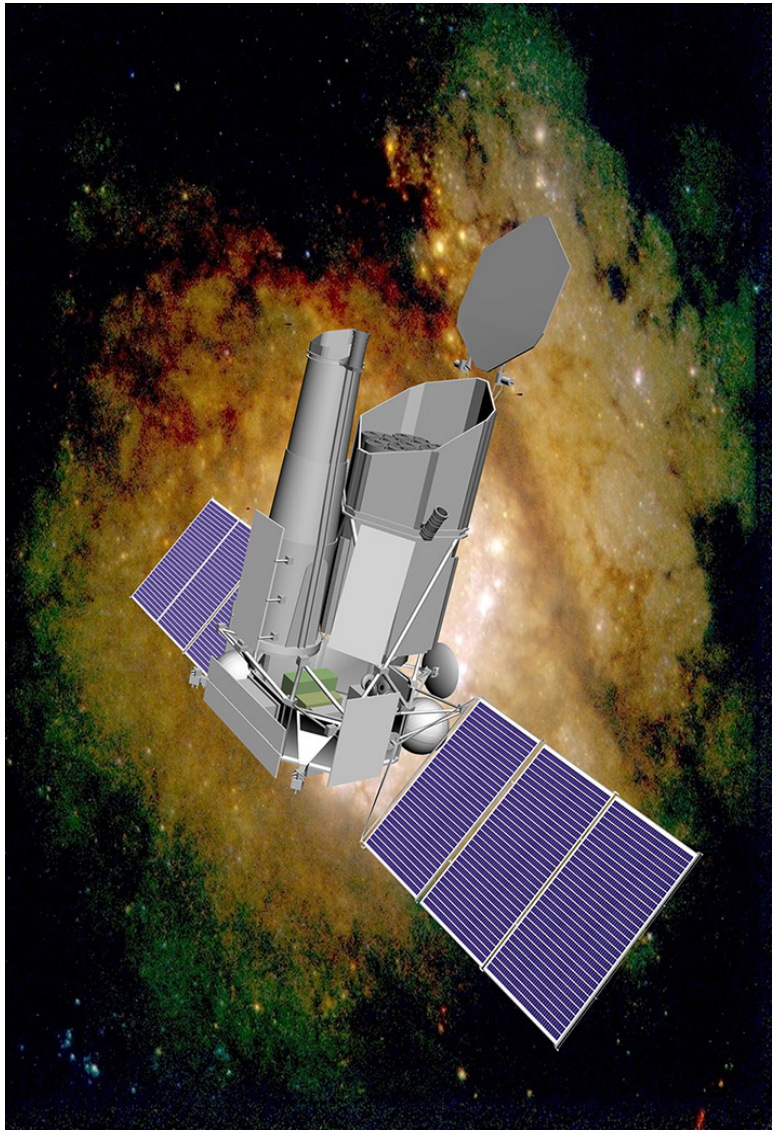
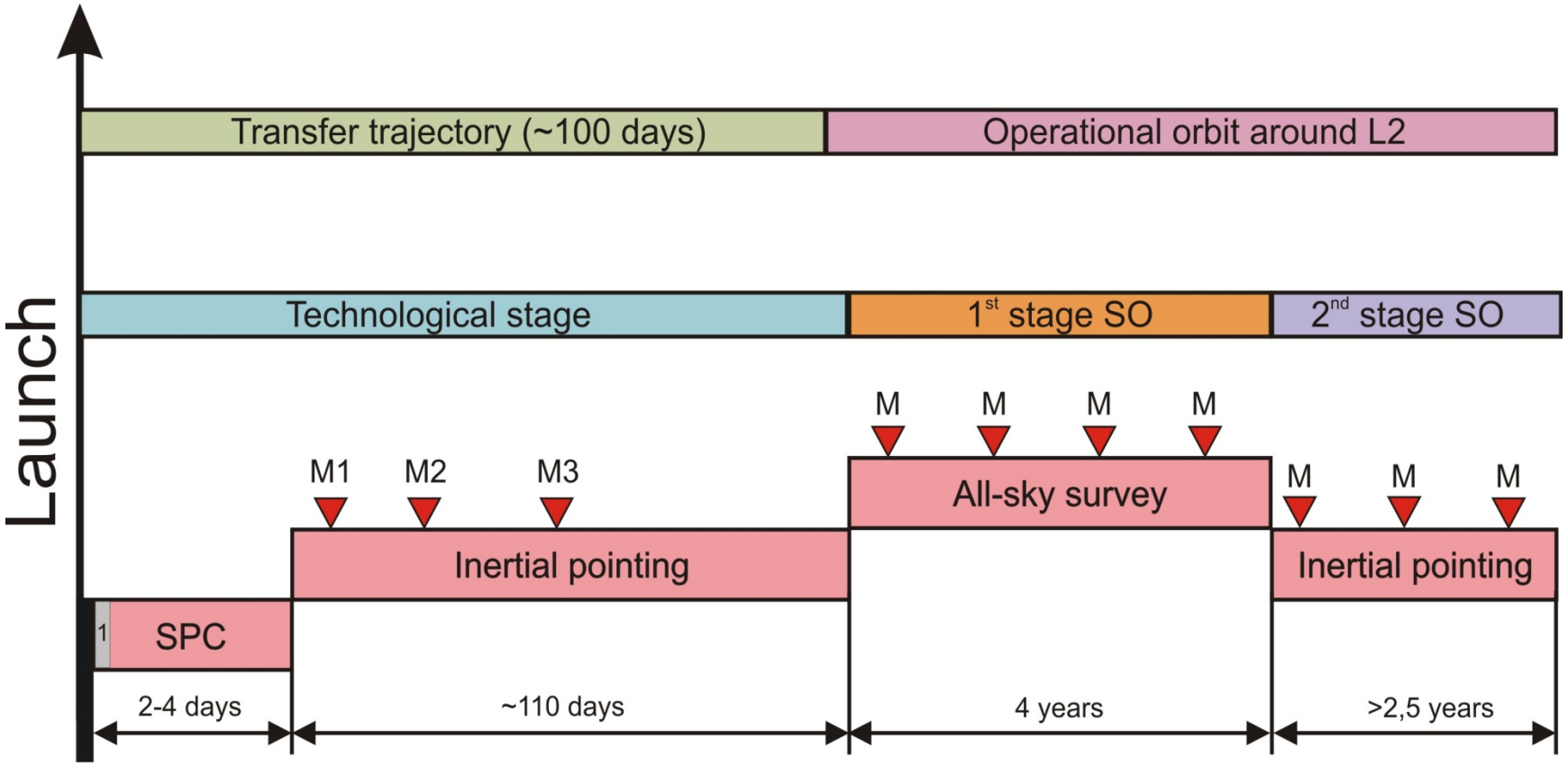
Spectr-RG Mission Control



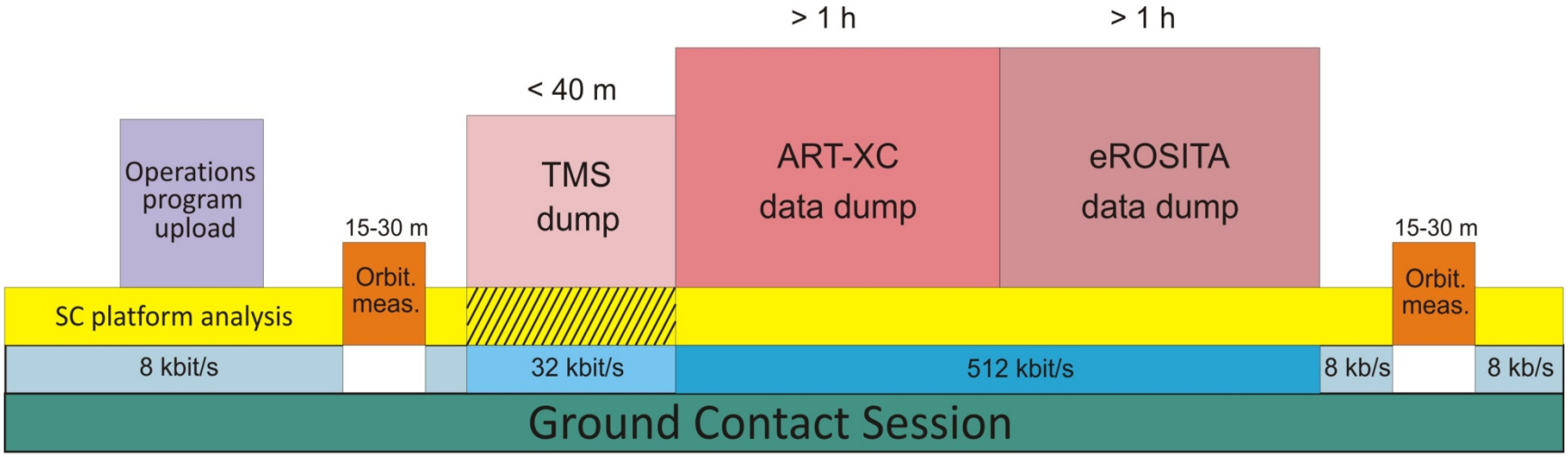
Spectr-RG Flight Plan



Technological Stage Key Events

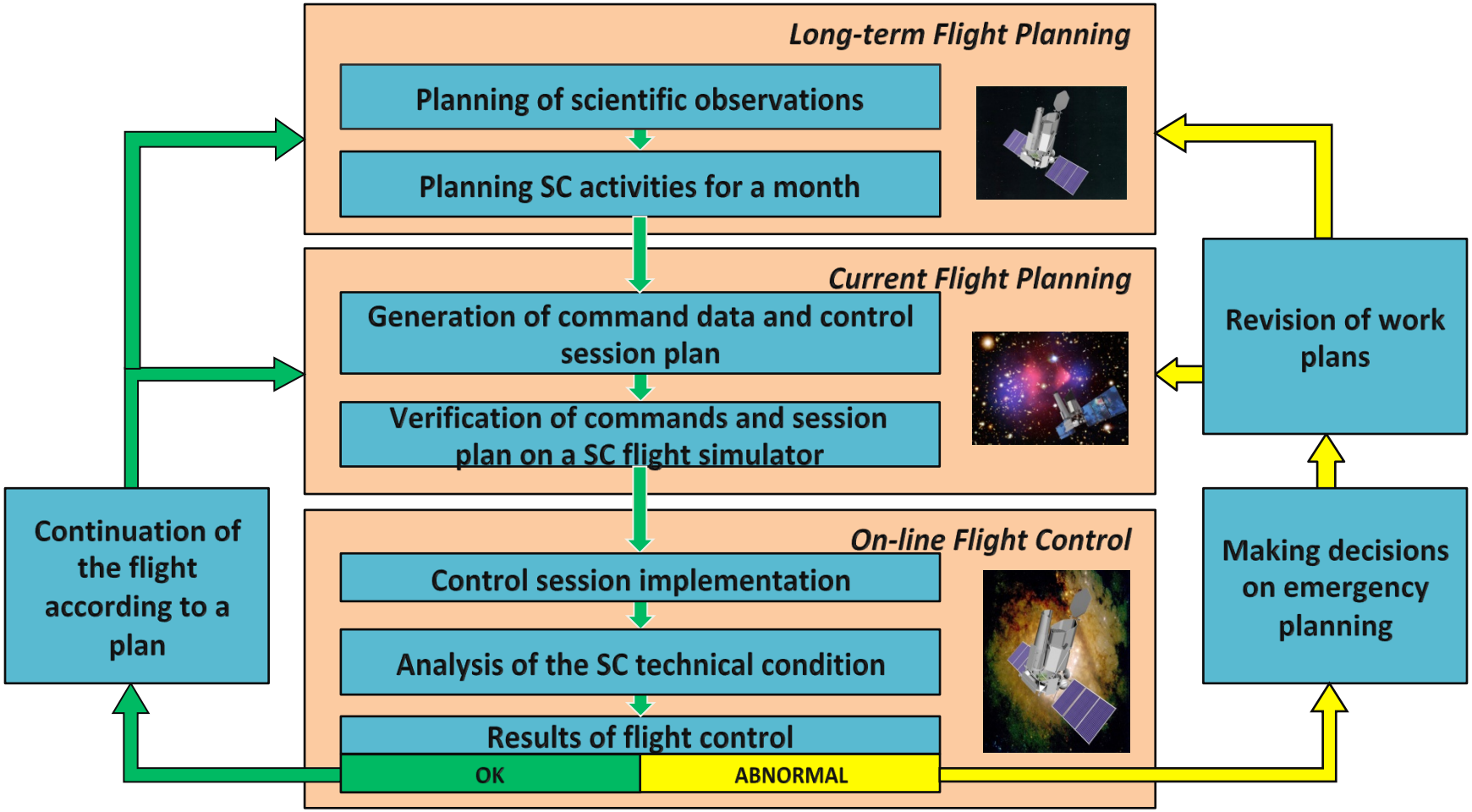
Days	Operations
1	Launch, solar-pointing control (SPC), turning BUSOTR, SSOI, ITC on
3–4	Switch to inertial attitude control mode
10	1st transfer trajectory correction (M1)
11	ART-XC and eROSITA covers opening
11-18	Turning ART-XC detectors on without high-voltage
14	Start of eROSITA outgassing
20	2nd transfer trajectory correction (M2)
21	Turning ART-XC detectors on with high-voltage
21-62	Test scientific observations by ART-XC
40	3rd transfer trajectory correction (M3)
41-62	Turning eROSITA cameras on
63-92	Test scientific observations by eROSITA
93-113	Scientific observations by both ART-XC and eROSITA
~100	Reaching L2
114	Start of the 1st stage of scientific observations in all-sky survey mode

SRG Typical Ground Contact Session



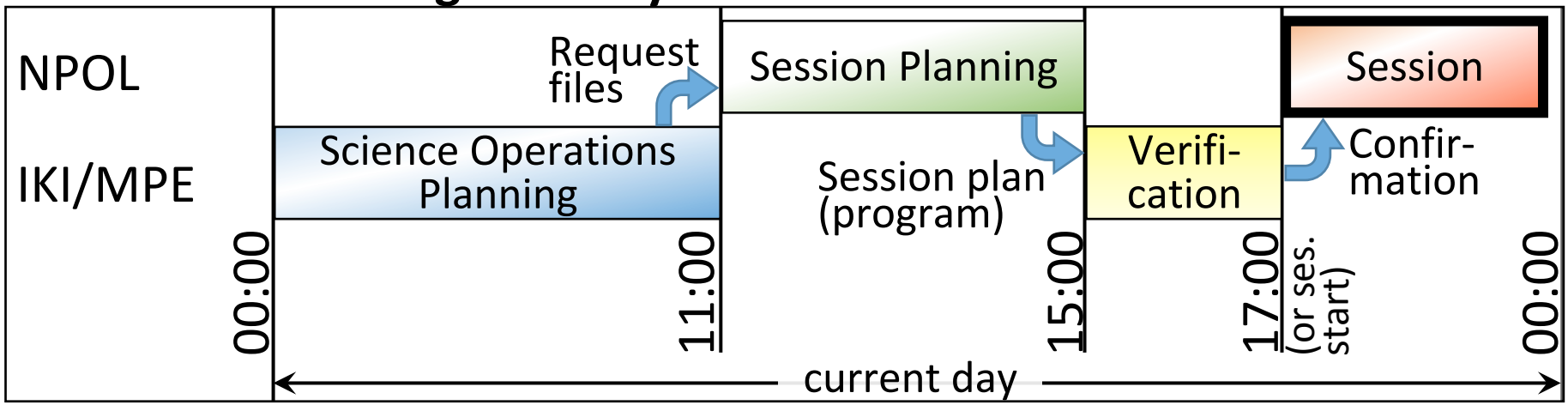
Overall session duration is ≈ 4 hours

«SPEKTR-RG» Control Flowchart

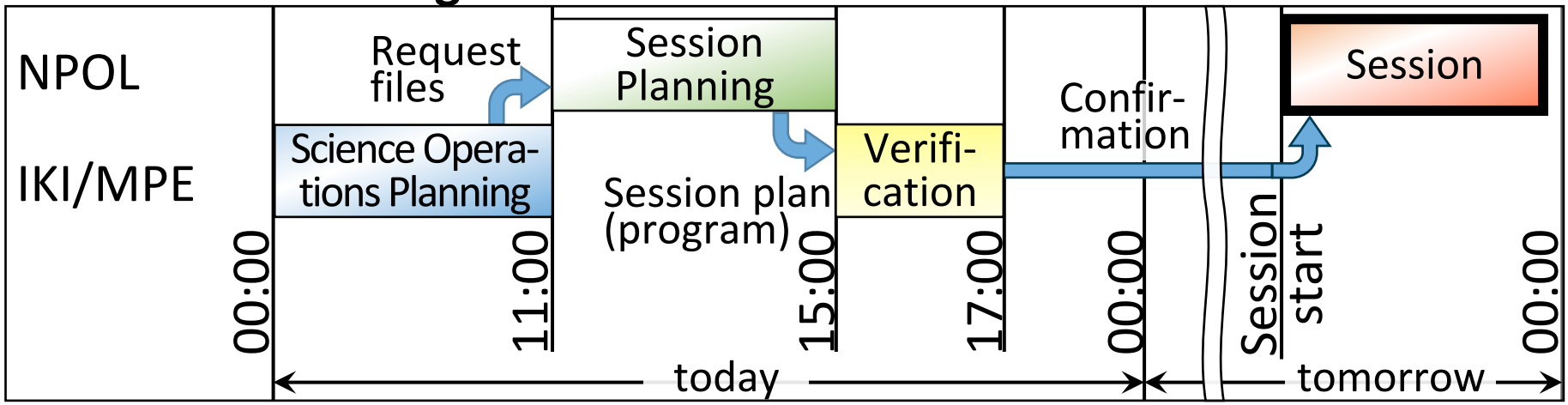


Ground Contact Session Planning Timeline

Case 1: Session begins today at 16:00 or later



Case 2: Session begins tomorrow earlier than 16:00



*** All times presented are Moscow times (UTC+3)**

Session Planning Formats

Format	Description	Identifier
Immediate Commands	• Commands are issued by operator during ground contact and immediately transferred to a science instrument • Successful delivery is not 100% guaranteed • Requested execution times may by shifted by NPOL • Permission-granted («on demand») issuance is possible	SEANCE
Time-tagged (suspended) commands	• Commands are sent in advance and issued to an instrument from OBC at a given time • 80 time-tagged slots are reserved for ART-XC and eROSITA (in total)	SUSPND
Flight Task	• An atomic set of time-tagged commands • Single Flight Task contains up to 7376 bytes of command data including execution times (4 bytes each) • Two completely independent Flight Tasks are available for ART-XC and eROSITA (in total)	FLIGHT
eROSITA Software Update Commands	• Operation is implemented during ground contact session by means of one or several Flight Tasks • Nominal command execution times may be shifted by NPOL	UPDATE

Science Program Complement During a Session

Unplanned Commands and Flight Tasks	• Same formats and procedures are used as during regular planning • Requests are to be processed by NPOL's planning team (≈20 minutes)
Emergency commands	• Commands are processed in advance and available for session operator at any time • Commands can be issued during ≈1 minute after confirmation except intervals of SC service platform operations

* In both cases IKI's operator phone confirmation is necessary

Thank you for your attention!