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Subject : <u>FIRST/Planck Payload Funding</u>

Dear Colleague,

After the discussions at our recent meeting in Paris on 21 October, we in ESA have reviewed the evolution of the schedules in the last period, in order to clarify some of the questions raised at the meeting.

I now want to send you these clarifications, in the conviction that they can all help us forward toward a credible FIRST and Planck programme.

The AO asked for a delivery of QM's in April 2002, PFM's in early January 2004, flight acceptance review in July 2005 and launch at the end of 2005.

During the preparation of the proposal several PI's flagged funding problems and asked for modification of these dates. On 28 January 1998 (PT-05224) ESA however, confirmed these dates for the proposal saying also that "the actual launch date will need to be agreed with the SPC at its May meeting...".

ESA's proposal on the May 1998 SPC (based on the "merged" option) included a schedule where the delivery of the QM's had been shifted to mid 2002, PFM's in the first quarter of 2004, FAR in October 2005 and launch to mid-2006.

The latest working schedule, issued after the May SPC and still valid today assumes a QM delivery in March 2003 (i.e. 9 months later than the SPC proposal, which should alleviate some funding problems), FM deliveries in July 2004 (4-6 months later than SPC dates), FAR in September 2006 (11 months later) and launch at the end of March 2007 (9 months later).

This last schedule is based on the detailed AIV plan shown at the last meeting. Therefore the apparent inconsistency between launch date (or FAR) delay and the FM delivery delay is of the order of 5-7 months. This is explained by the better definition of a "bottom up" schedule approach and by the FIRST/Planck carrier integration activities (about 4 months) additional to the FIRST critical path, which itself has remained practically the same between merger and carrier implementation.

In the overall schedule (unchanged since July) only one common PFM delivery for all FIRST and Planck experiments is shown.

In the detailed system AIV schedule presented in Paris you can notice in line 71 of the Planck schedule a "slack" of 3 months before the SVM is ready. Therefore one may theoretically consider such a delay on the Planck payload delivery and in so doing put both mission payloads on the critical path, which is not at all wise today.

However, let me repeat once again, all these considerations of a month here and there, are rather illusiory and dangerous at this stage. Each delivery, at each level in any industrial and scientific consortium must at this stage show a margin commensurate with the complexity and the length of each activity. This margin at instrument level has today to be larger than one or 2 months, otherwise no serious schedule control will be possible to the instrument manager.

Therefore it appears that the type of funding peak problems quoted in the meeting (about 1 year) are not solvable by juggling some dates, when so many uncertainties on the exact system and PLM's AIV sequences are still open.

From another point of view please consider the ISO experience, quoted in the meeting (more than 2 years between FM deliveries and FAR, practically the same as FIRST/Planck).

ISO had a full qualification model cryostat and set of experiments. The reduced FIRST model philosophy will use instead a lower fidelity cryostat for verification tests of the instruments QM.

Therefore the FM schedule risk is increased in FIRST vis-à-vis ISO and still the schedule is the same.

Comparison with other missions with integration "at ambient" are also misleading.

In Planck the instruments FPU's must come together (and not sequentially over several months like in other missions) at the very beginning of a complex PLM integration and test sequence and are not "swappable" at any moment for modifications, updates etc. which are so common in the real life of other missions.

Similarly in FIRST the three instruments must go into the cryostat all together at the very beginning of the cryostat re-assembly which will be followed by a whole series of sequential activities building up the PLM.

In summary all these considerations should reinforce our resolve to address the ongoing funding problems of FIRST/Planck by more radical and realistic means.

In the next meetings the results of the two actions agreed in Paris will hopefully give you a tool to quantify accurately enough the extent of these problems and to assess possible ways of bringing the funding problems of the national agencies towards a solution.

Best regards,

F. Felici