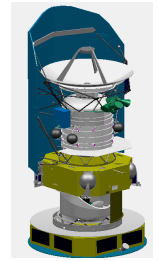




FIRST/Planck

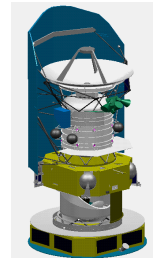


3rd FIRST/Planck Payload Meeting

ESA Headquarters, Paris

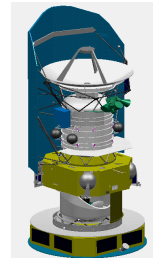
11 January 1999

ESA FIRST/Planck Project



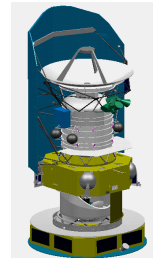
Overview (1)

- Since October Technical and Management Progress meetings have been held with each PI and his instrument team
- One Science Team meeting was also held for each mission
- The Planck Straylight Review process was kicked off on 16/11/98 with a meeting
- The Planck Payload Architect contract has been assigned to Alcatel (Cannes) - Kick-off just held.
- The FIRST SiC demonstration model reflector is being polished in Opteon (Finland)
- The JPL work on the CFRP FIRST reflector is ongoing



Overview (2)

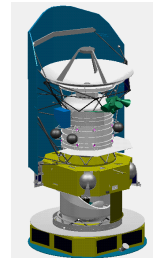
- A proposal for NASA's letter of agreement was received and is being commented by ESA
- FINDAS work is heading towards end of the prototyping phase (March 1999) successfully
- Problems both technical and financial have been encountered by the Planck experiments in the JPL sorption cooler supply. They are being discussed, alternatives have been identified and are being costed
- Commonality working groups have been set-up and related tasks agreed



Action from last meeting

- During last meeting it was agreed that each PI would define in consultation with the delegations contributing to each experiment:
 - The delay vis-à-vis the schedule published by ESA in July and October if the present funding problems could not be overcome
 - The amount of money necessary (by year) from each contributing country to meet the published schedule

The answers from the PI's are as follows:



FIRST schedule delays

PACS:

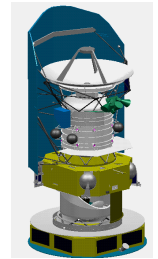
1 year delay. Problems concentrated in the short term funding from Germany of the Ge-Ga stressed detectors at Antec (600 KEURO). If this 1999 funding problem could be solved then compliance with the ESA schedule is assured.

SPIRE:

A 9 months delay is foreseen, mainly from France spending profile problems in 2000/2001, but also from funding levels of UK in 2001-2007.

HIFI:

The instrument deliveries are 1 year late vis-à-vis the ESA schedule due to short term (1999) funding problem in Germany and France.



Planck schedule delays

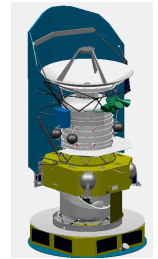
LFI:

5 months schedule delay with present funding. If deliveries of QM and FM are postponed by 5 months, then spending profile problems in Italy in 2001/2/3 would be overcome.

HFI:

Delay TBD on CQM only.

Most important problem is the U.S. sorption cooler. NASA still to commit (end January) to increased budget.



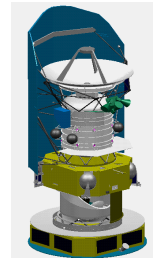
Funding problem types

Lack of funds:

Example: PACS (German contribution), SPIRE (UK contribution):
Money has to be found during the relevant year from other sources to remove this problem

Funding profile (cashflow):

Example: SPIRE (French contribution) and LFI (Italian contribution): The money is available in later years and the Funding Agency is willing to spend it. In principle a bank loan or pre-financing from contractors could solve it with minor extra costs.



FIRST funding shortfall to meet schedule

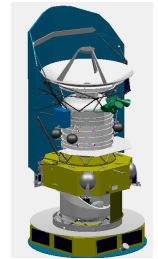
PACS: 600 KAU in 1999 of detector development at Antec (Germany)
ICC support required but undefined (Germany)

SPIRE: 736 KEURO (5 MF) approx. in 2000
1.5 MEURO (10 MF) approx. in 2001
750 KEURO (1 M£) approx. spread uniformly between 2002 and 2007
(ICC development in UK)
Undefined "support" required to ESA in operations (U.K.)

Cashflow problem: money available in later years in France

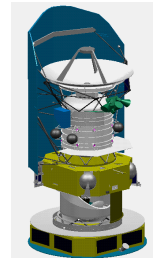
HIFI: or 500 KEURO (1MDM) in 1999 (Germany) to reduce delay to 6 months
1 MEURO (2 MDM) in 1999 (Germany) to reduce delay to 3 months

Note: *The cold test vibration facility of ISO is no longer adequate. France is not wishing to supply a new facility for all the FIRST instruments. The shortfall is TBD.*



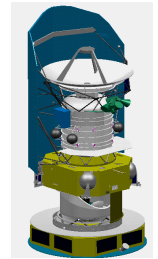
Planck funding shortfall to meet schedule

LFI:	2 MEURO in 2001	Cashflow problem: money available in later years in Italy
	2 MEURO in 2002	
	1.2 MEURO in 2003	
LFI/HFI:	U.S. sorption cooler extra funding necessary (order of 10 M\$)	Likely to be solved by Pls-JPL with NASA on 21.01.99
HFI:	0.5 MEURO (3 MF) in 1999	Cashflow problem: money available in later years in France
	0.8 MEURO (5 MF) in 2000	
	If alternative cooler solution necessary then impact TBD (mainly UK?)	



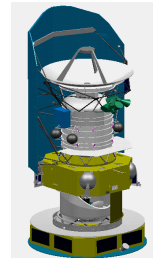
Further Actions Undertaken by ESA (1)

- The TRP contract proposal filed in April by PACS for a continuation of the Antec FIRSA program has been finally approved in ESA. This makes PACS fully compliant with the ESA schedule (ICC ?).
- The LFI deliveries can be delayed by 3 months (see ESA letter PT-06017 of 30/10/98) at the cost of a schedule criticality on both programs. Therefore a 2 months delivery problem remains vis-à-vis the ESA schedule.



Further Actions Undertaken by ESA (2)

- Discussions have been started on the ESA system schedule (presented in October) between the Project and PI's. Experiments have also started to show more detailed schedules with the setting up of the teams. Ongoing discussions are foreseen. However, no valid immediate suggestion for shortening the period between delivery of FM's and launch or to bring forward the experiment deliveries has been found
- The Project has generated a draft specification for a cold vibration facility to help the process of identifying costs associated to this facility

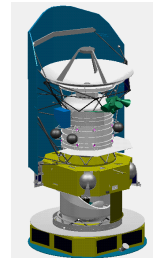


Situation today

	<u>FIRST</u>			<u>Planck</u>	
	<u>PACS</u>	<u>SPIRE</u>	<u>HIFI</u>	<u>HFI</u>	<u>LFI</u>
Total funds	(64)	(58)	(93)	(52)	(59)
Delay today	0 months	9 months	12 months	TBD	2 months
Extra Funds	TBD (ICC)	0.8 (2002-07) UK TBD (ICC)	1.0 (1999) Germany	TBC US (UK?)	TBC US
Cashflow		0.7 (2000) 1.5 (2001) France		0.5 (1999) 0.8 (2000) France	1.0 (2001) TBC 1.0 (2002) TBC 0.7 (2003) TBC Italy
Delay	none	none	3 months	none	none

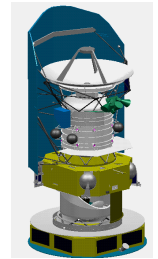
All costs in MEURO

Cold Vibration Test Facility tbd



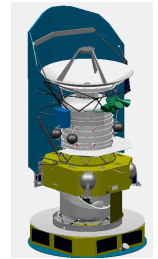
In Summary (1)

- If one assumes that cashflow problems in France and Italy are solved by paying some interest on loans, the overall financial deficit is in the order of 1 or 2 MEURO, spread among one or two major countries
- This is **less than one percent (!)** of the overall financial effort (direct funding) already allocated for the FIRST/Planck payload by the national funding agencies



In Summary (2)

- The consequences of this relatively tiny shortfall are however, ruinously non proportional in terms of schedule (12 months out of 8 years) because elements on critical paths are affected.
- If this effect is not corrected the program will suffer a delay in the launch date which is likely to impact the start of the industrial phase, will increase scientific teams expenditures and steal the momentum and the enthusiasm that is building up around these missions, approved long ago now



Possible Actions

We see various possibilities:

- Delegations with “cashflow” problems get a loan somewhere to ease the funding profile
- Some scientific teams take over certain tasks (e.g. ICC’s) today allocated to the groups in countries with funding problems
- PI’s delete certain options (in both FIRST and/or Planck), associated to funding in countries with problems
- PI’s reduce the performance of their instruments when these are associated with developments in countries with problems
- The funding agencies seek reductions of the operational expenditures, with the help of the commonality working group(s) set-up already in ESA