



## ***Project Milestones***

- Science Concept Review -July 1998.
- In May 2002 a Technical Interchange Meeting (TIM) held at NASA Glenn, in lieu of an RDR, led to flight hardware be designed and built by the European Space Agency.
- Douglas Durian's FOAM SRD was used as the basis for an "Experimental Requirements Document (ERD)", which incorporates the joint US-European science requirements.
- The Phase-A Final Meeting April 2003. The Phase-B Final Meeting March 2004.
- European P.I.s: Langevin , Saint-Jalmes, Adler (France,), Vanderwalle (Belgium), Waiere (Ireland), Odenbach, Banhardt (Germany), Kronberg (Sweden)
- PDR meeting in December 2006.

## ***Project Status (January 2006)***

- Pre CDR-RID meeting in Bordeaux P.Is, PS/PM, Engineering Team members and Contractors Feb. 14, 2007
- Phase-C/D is planned with a tentative target date of March 2007.
- Flight hardware delivery: 2008 Summer
- Launch: July 2009

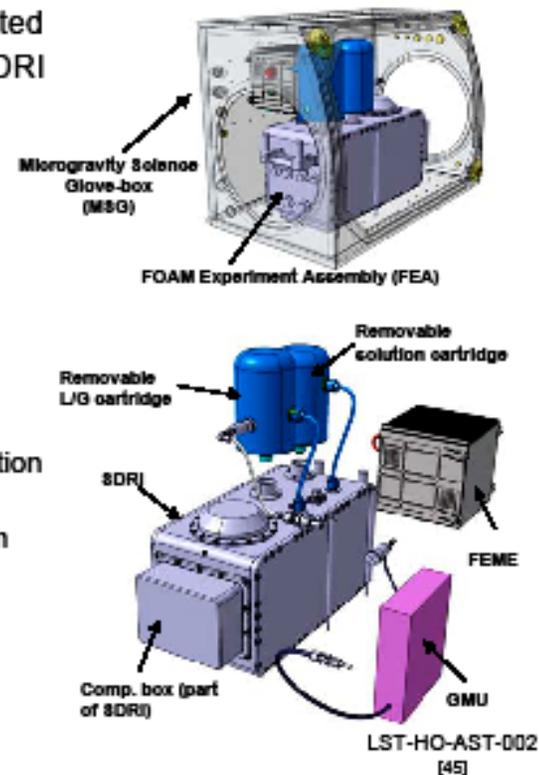


# FOAM

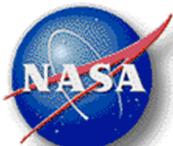
## FEA & SDRI overall presentation

## ASTRIUM

- FOAM Experiment Assembly (FEA) implemented in MSG structured around 1 common insert SDRI and 4 external dedicated boxes.
- SDRI insert performs 3 type of experiences:
  - Drainage
  - Rheology
  - Stability
- Dedicated boxes are
  - Gas Mixing Unit (GMU) to provide gas
  - Removable solution cartridges to provide the solution to be tested and water for cleaning
  - Removable L/G filter cartridge to store liquids from used foam and to transfer gases to MSG
  - FEME to manage power and data transfers



Astrium Space Transportation

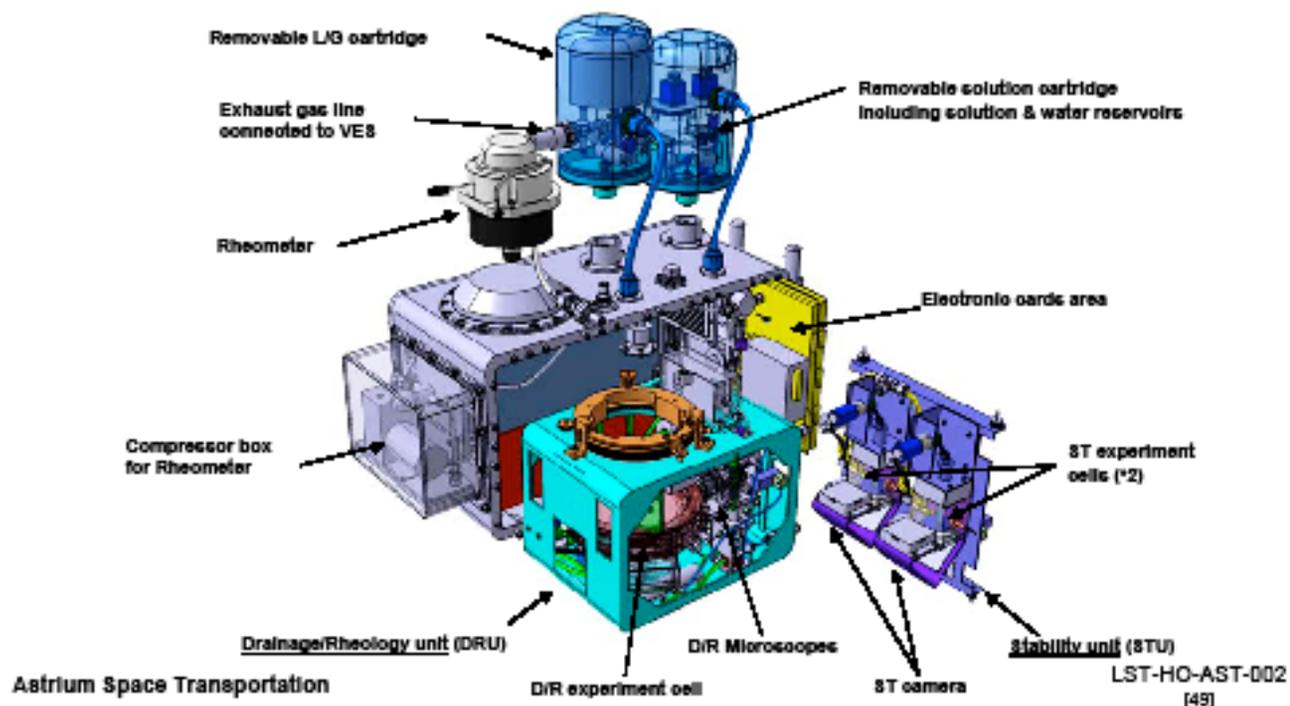


# FOAM

## SDRI internal architecture

## ASTRIUM

- Design driver: SDRI internal layout made of "independent" units to simplify interface management, assembly and unit tests.





# Project Milestone Schedule

## FOAM

2006				2007				2008				2009				2010			
1 st	2 nd	3rd	4th	1 st	2 nd	3rd	4th	1 st	2 nd	3rd	4th	1 st	2 nd	3rd	4th	1 st	2 nd	3rd	4th
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PDR				CDR				Delivery				Launch				Final Report			



# Requirements

## FOAM

### Time Requirements

	<u>MSG Time</u>	<u>Crew Time</u>
Grand Total for all P.I. Experiments	554.5 Hrs	34.2 Hrs

### Mass budget

Mass in MSG WV	Total	68.0 Kg.
Stowed Items mass	Total	143 Kg.

### Power Requirement

120V DC MSG: 450W max  
MSG VD: 4.5 W



## FOAM

### ***Launch with ATV, MPLM, or Shuttle***

- Cargo transfer bags (138L/81.72 Kg)
  - SDRI: 73.3 L
  - ESS FEME/GMU/Harness/etc total: 25.75 L
  - Mass of FEA elements: 62.1Kg
- Cargo transfer bags (size depending upon # of cartridges)
  - 44 cartridges total : 180.4 L (tentative)
  - total mass of cartridges: 259 Kg

### ***Launch with Progress***

- Progress Soft Containers (will include: ESS FME, Solution cartridges, L/G cartridges, GMU, Harness, Hoses, Tools, etc.).
- Specific Progress launch container for SDRI.