

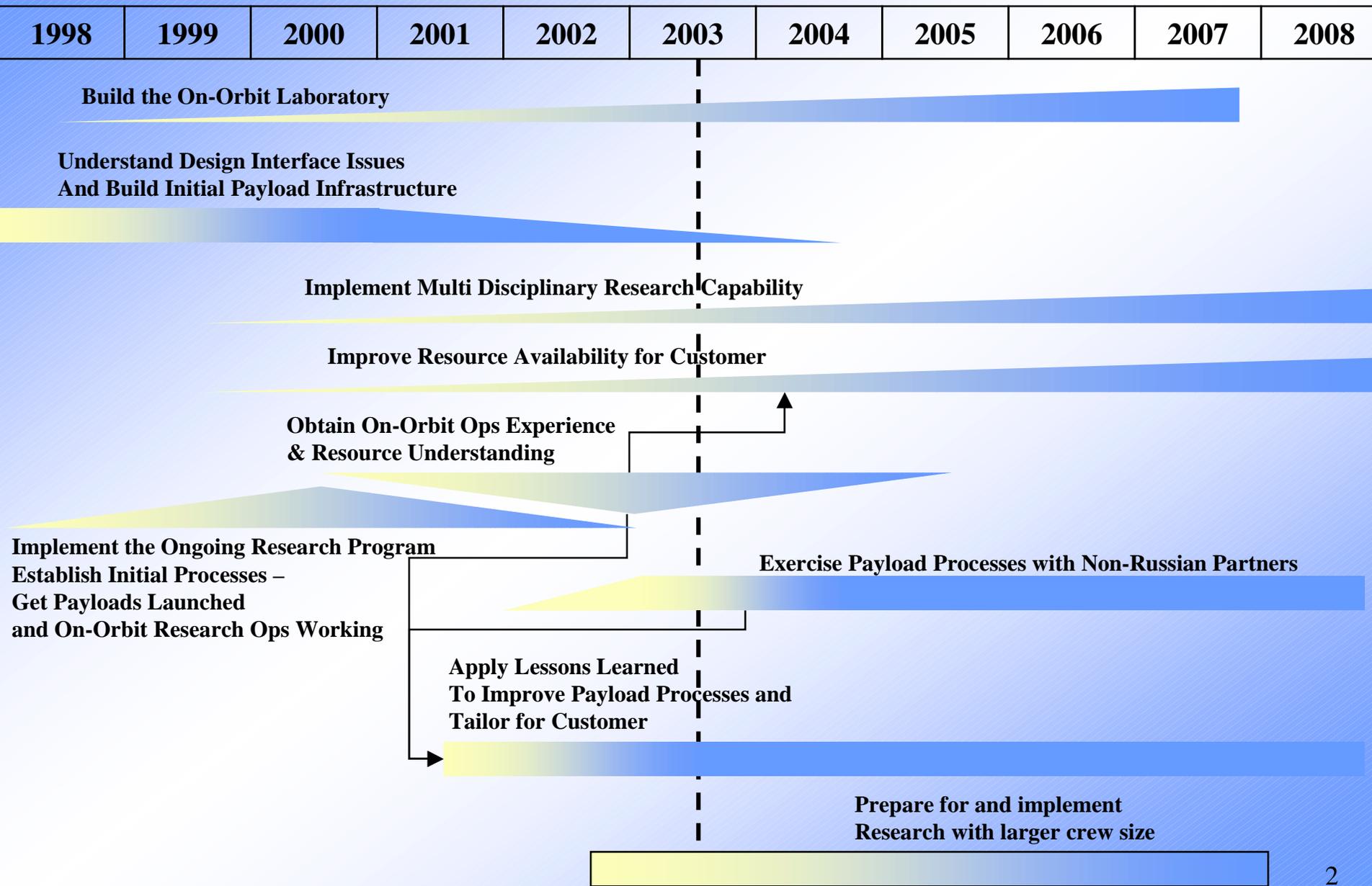


# **ISS Payloads Office Status**

**Space Station Utilization  
Advisory Subcommittee**

**Lesa Roe  
July 29, 2003**

# Stages of ISS Research Implementation



# Overview

## Strategy

## Approach

## Status

**Implement The  
Ongoing  
Research Program**

**Optimize Research  
Within Available  
Flight Resources  
&  
Existing  
Infrastructure**

74 Investigations Supported On-orbit, or Pre-Post Flight Data Collection Through Increment 7

Over 28 months of continuous experiment run time completed to date

Increments 0-6 Complete  
Increment 7 in-flight operations underway

Increment 8 Replan Continuing;  
taking advantage of on-orbit resources and  
Russian launch opportunities

Positioning Research Program for Shuttle return to flight

# Resources in the Shuttle down time

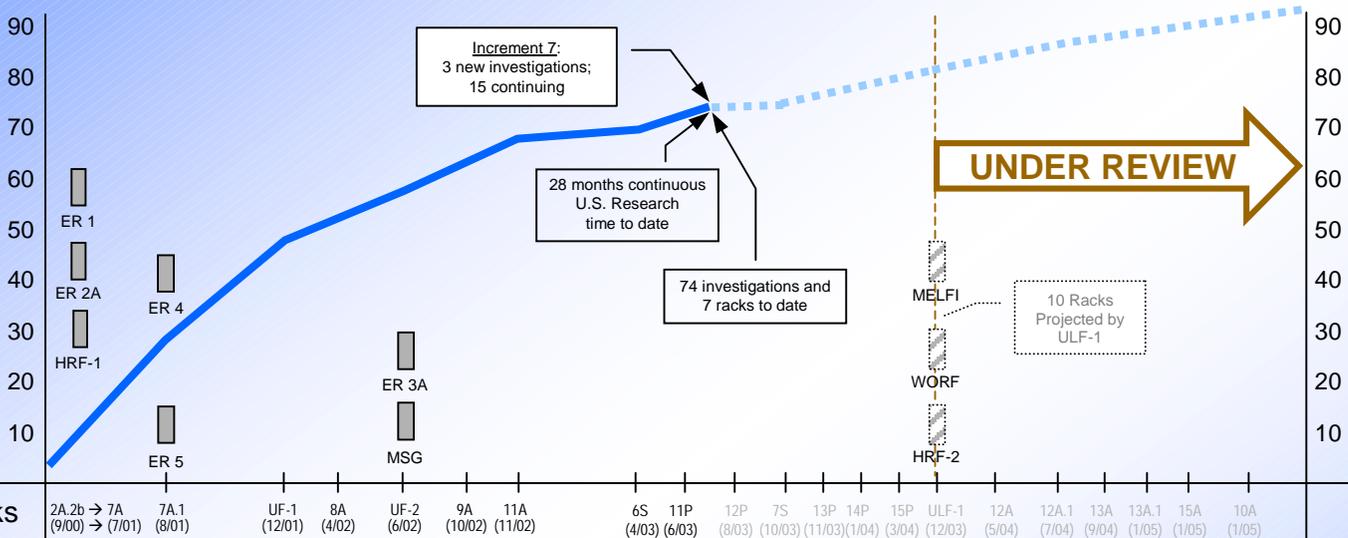
- **Space Shuttle Program is targeting Return to Flight NET March 11, 2004**
- **Assume all flights lose 1026 lbs of upmass from post-Columbia and other changes**
- **ISS Program has approved get-wells to minimize impacts, particularly to Utilization, e.g.,**
  - **Reduction of ISS altitude by 15 nm on ULF1, 12A, and 12A.1, for a 1500-lb performance gain on each flight**
  - **Acceleration of certification of higher capability Resupply Stowage Platform, adding 200 lbs additional capability per RSP**
- **ISS crew size will return to 3 when Shuttles resume flying**
- **Proceeding on a limited set of investigations requiring no upmass**
- **Select for integration a small set of investigations requiring minimal upmass for launch on Russian vehicles, ship the hardware to Russia to await a flight opportunity**
  - **Guidelines are to select a total of 10-20 kg of payloads for each Progress flight, and limit each payload to about 2.5 kg to maximize the chances of being accommodated**
- **Pursue coordination of research opportunities with International Partners, such as shared use of hardware**

# NASA Expedition 7 and 8 Research Planning

- **NASA has 26 investigations in progress or planned for Expeditions 7 and 8 (not including latest 13Progress proposals)**
- **To date, NASA research objectives on Expedition 7 are being met**
- **Microgravity Sciences Glovebox (MSG) was successfully repaired late in Expedition 6, allowing resumption of research activities during Expeditions 7 and 8**
- **Making use of on-board resources for new and additional research**
- **Although our formal allocations for Russian vehicle upmass and downmass are 0, we have achieved some successes**
  - **3 Education items (<1 kg) were launched on 6Soyuz in late April, 2 activities completed to date**
  - **6 payloads (15.3 kg) are planned for launch on 12Progress late August**
  - **7 payloads (25.7 kg) were recently selected for 13Progress flight in late November**
  - **Several items (6.3 kg) were returned on 5Soyuz in early May**
  - **We are requesting return of several items (7.5 kg) on 6Soyuz in late October**
  - **Call for payloads for 14Progress (January 2004) is expected early to mid August**

# ISS Research Accommodation Status

## NASA Investigations (Cumulative)



= Payload Racks

- A = Active Rack Isolation System (ARIS)
- ER = EXPRESS Rack
- HRF = Human Research Facility
- MELFI = Minus Eighty-degree Lab Freezer for ISS
- MLE = Middeck Locker Equivalent
- MSG = Microgravity Science Glovebox
- WORF = Window Observational Research Facility

Incrs 0-2	Incr 3	Incr 4	Incr 5	Incr 6	Incr 7	Incr 8	Incr/ ULF1	Incr/ 12A.1	Incr/ 15A	Cumulative Actual Totals (thru June 30 '03)

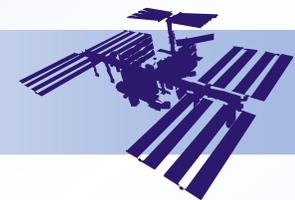
<b>Research Crew Time Total (US/Russian)</b>	294 / 116	207 / 133	335 / 109	280 / 138	293 / 86	43.9 / 23.4 (251 / 69)	(402 / 57)	(378 / 54)	(297 / 42)	(532 / 76)	1452.9 / 605.4 hrs
<b>Avg Crew Time Per Work Week (US/Russian)</b>	10.7 / 4.2	14.1 / 9.1	15.1 / 4.9	13.6 / 6.6	14.7 / 4.3	4.9 / 2.6 (11.0 / 3.0)	(16.1 / 2.3)	(23.9 / 3.4)	(14.9 / 2.1)	(21.4 / 3.1)	13.4 / 5.7 hrs (from Inc 3 to date)
<b>Research Rack Mass to Orbit (kg)</b>	1600	895	0	1138	0	0 (0)	(0)	(2087)	(0)	(0)	3633 kg
<b>Research Resupply Mass to Orbit (kg)</b>	1018	275	699	843	111	0 (0)	(0)	(412)	(1318)	(382)	2946 kg
<b>Research Supplies in Middeck (or Soyuz/Progress) (MLE)</b>	12	8	18	15	6	0 (0)	(0)	(10.2)	(15)	(5)	59 MLE

Note: For space-saving purposes, all individual flight data above have been combined or averaged for Increments 0 through 2.

(XXX) = most recent accommodation for entire Increment

# U.S. Research Investigations Accommodated, Compared to the 12-Month Plan

## 18 July 2003 (Data through 30 June 2003)

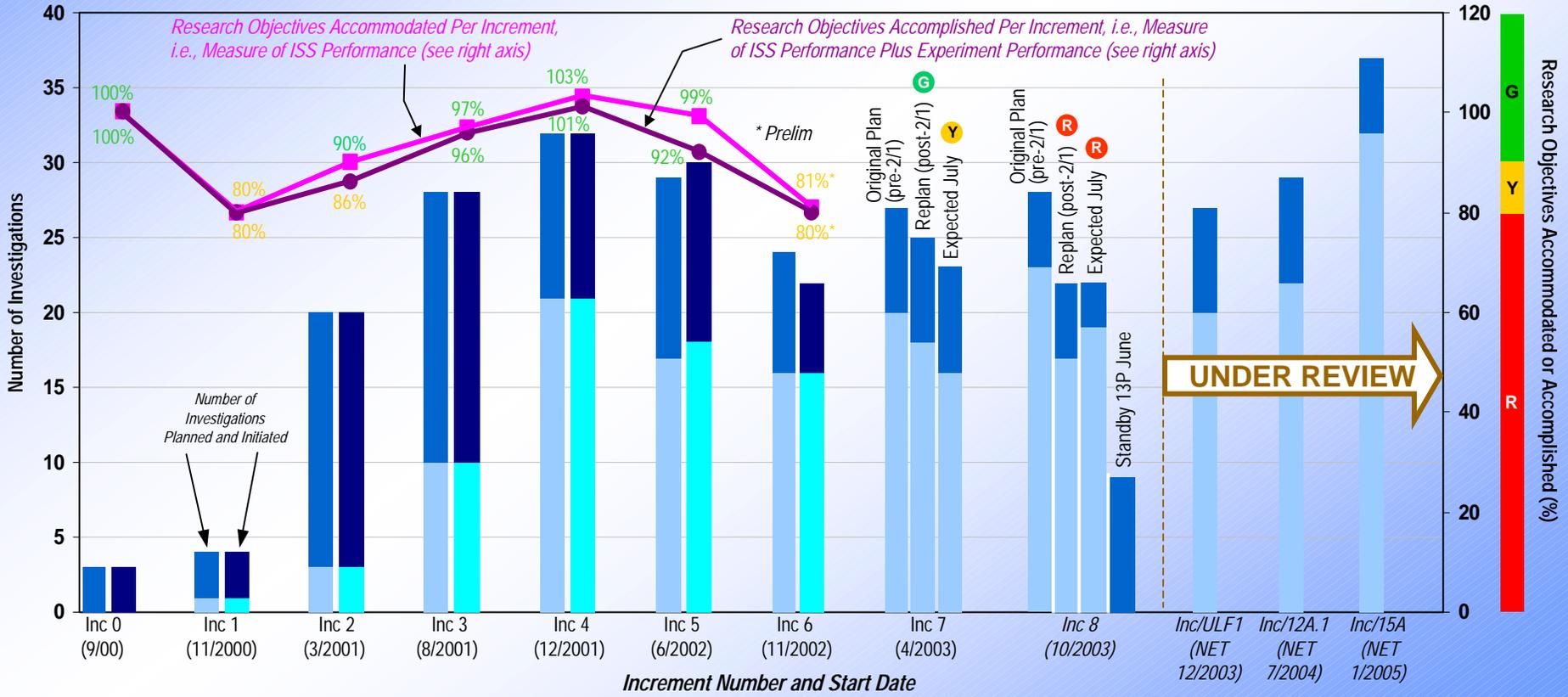


- Y** During Increment 6, 92% of Planned Investigations initiated, 81% of research objectives accommodated.
- G** Cumulative through Increment 6: 99% Planned Investigations initiated.
- Y** Increment 7: 85% of the number of Originally Planned Investigations expected to be initiated.
- G** Increment 7: 92% of the number of Replanned Investigations expected to be initiated.
- R** Increment 8: 79% of the number of Originally Planned Investigations expected to be initiated.
- G** If 13P research standby is achieved, 111% of the number of Originally Planned Investigations will be initiated.

Status: **Yellow**

Total Number of Investigations to Date = 74  
 Research Objectives Accommodated (Cumulative) through Increment 6\* = 94%  
 Research Objectives Accomplished (Cumulative) through Increment 6\* = 91%

Continuous U.S. Research Time to Date = 28 Months  
 Average Investigation Duration through Increment 6\*\* = 1838 Hours (77 days)  
 Average Crew Time Per Investigation through Increment 6 = 22 Hours



■ Planned New Investigations Per Increment  
■ Planned Continuing Investigations Per Increment  
—●— Research Objectives Accommodated Per Increment  
■ Initiated New Investigations Per Increment  
■ Initiated Continuing Investigations Per Increment  
—●— Research Objectives Accomplished Per Increment

Note: The complement of Investigations in the expected plans is partially different from that in the original plans.

\*\* Not including Human Research Investigation Duration

# The First 10 Racks

## Strategy

Provide Multi-Discipline Capability to ISS

## Approach

Launch First 10 NASA Racks to ISS

## Status

First 7 Racks On Orbit  
(HRF1, EXPRESS 1,2A, 3A,4,5, MSG)

Next 3 on ULF1:  
MELFI, WORF, HRF2

Columbus Module rack topology recently baselined

# ISS Is Being Outfitted

- 7 Racks are On Orbit Now



Microgravity Science Glovebox



EXPRESS Rack 2A



EXPRESS Rack 4



EXPRESS Rack 1



Human Research Facility Rack 1



EXPRESS Rack 5



EXPRESS Rack 3A

- 3 Additional Racks will be on orbit plus the SpaceDRUMS Hardware (full EXPRESS Rack insert) after ULF1

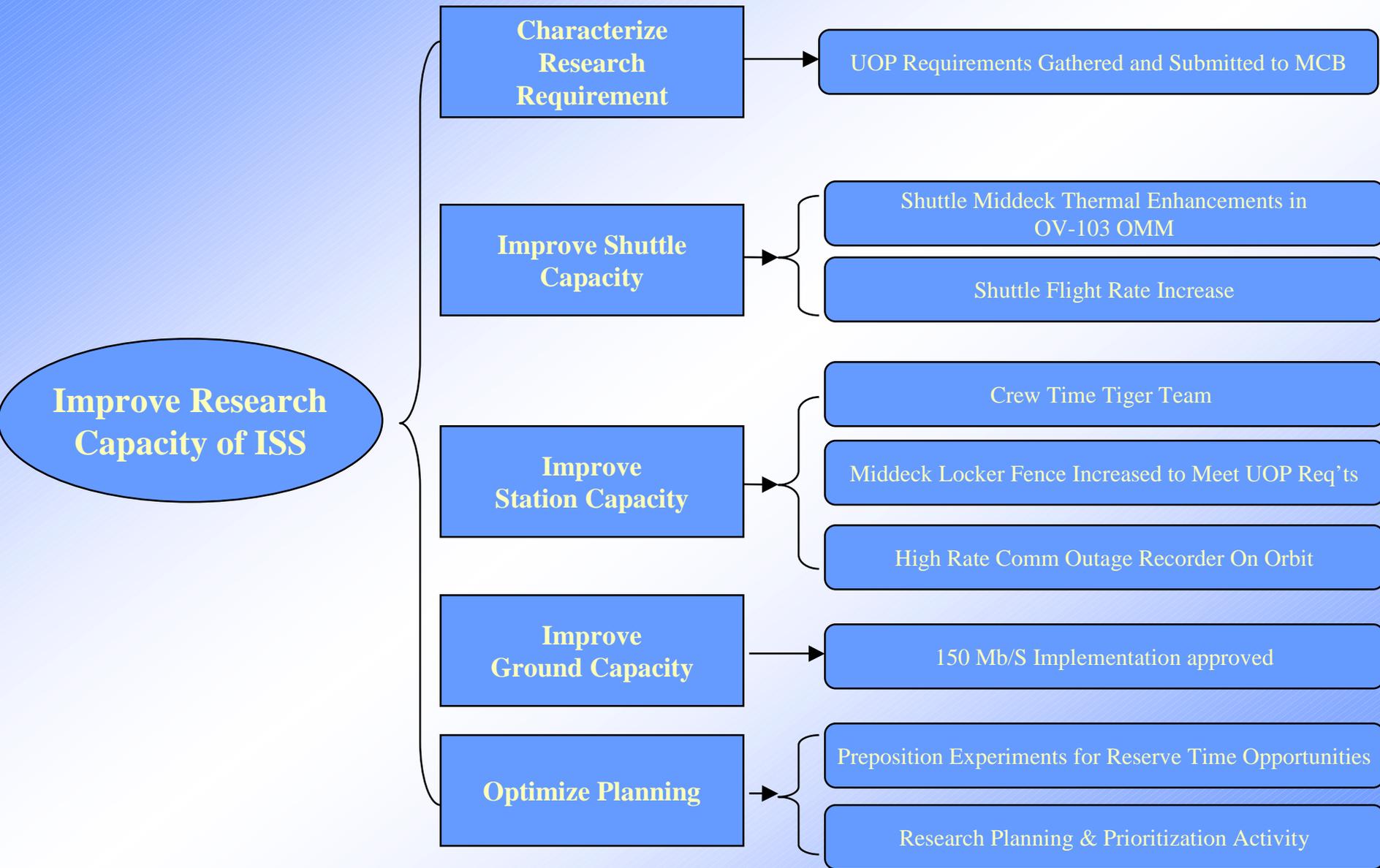
# ULF1 Manifesting Status

- **Performance changes and logistics backlog requirements will very likely result in a replan of the overall ULF1 manifest**
- **To maintain a balance of research rack outfitting and viable increment science, two options are under consideration**
  - **Fly all 4 racks previously planned, but have limited or no resupply capability to conduct increment science**
  - **Defer one rack (WORF) and have sufficient resupply capability to maintain robust increment science program**
- **Although the middeck payloads are threatened by the tile repair kit, ISS Program will cable one middeck locker location for power and will keep payloads as candidates on the manifest**
- **Decision not expected until mid-August at the earliest; ISS Program is also looking at ways to increase upmass capability for utilization**
- **Deferring WORF may have downstream impacts to rack outfitting (MPOM)**
  - **The ISS program has been evaluating the possibility of changing the pressurized carrier on 13A.1 from a single Spacehab to an MPLM; this would mitigate downstream impacts**
  - **Currently, ULF2 has the capability to fly an additional rack, but the post-Columbia impacts on that flight have not yet been assessed**

# ULF1 Rack Status

- **WORF, MELFI and HRF-2 were removed from the MPLM in May for payload maintenance and ITCS fluid changeout**
  - **EXPRESS Transportation Rack (ETR), containing Space-DRUMS, remains in the MPLM**
- **Hand Posture Analyzer (HPA) removed from stowage and shipped to support 12P launch**
- **MELFI powered maintenance was conducted in June**
- **WORF suspect SSPCM removed end of June; WORF suspect SSPCM and spare SSPCM flying on ULF-1 were shipped to MSFC for inspection and potential repair; return to KSC in August**
- **Assuming a 3/11/04 launch date for ULF-1, the following are the significant processing milestones for the payload racks:**
  - **WORF, MELFI, HRF-2 re-test in PTCS: Early November 03**
  - **ITCS fluid changeout for payload racks: Mid-to-Late November 03**
  - **Payload Rack Closeouts for Flight: Mid-November to Early December 03**
  - **Rack Installation into MPLM:**
    - **WORF Mid-December 03**
    - **MELFI Early January 04**
    - **HRF-2 Mid-January 04**

# Research Capacity Improvements



# Focused Process Improvement

## Objectives:

- Develop clear integrated, value-stream end-to-end process and communicate it
- Validate/justify existing tool requirements and implement tool changes
- Reengineer process to capture, manage, and disseminate payload data to minimize Payload Developer data calls (documentation) but meet ISS Program needs
- Control processes and documentation to ensure that requirements creep is avoided

## Schedule

### SESSION 1: Payload Developer Interface

▼ Sept. 23 – 27

### SESSION 2: Internal Process Improvement

▼ Oct. 28 – Nov. 1

### SESSION 3: Internal Process Definition

▼ Dec. 2-6

### SESSION 4: Strategic Session – Process Improvement Approval

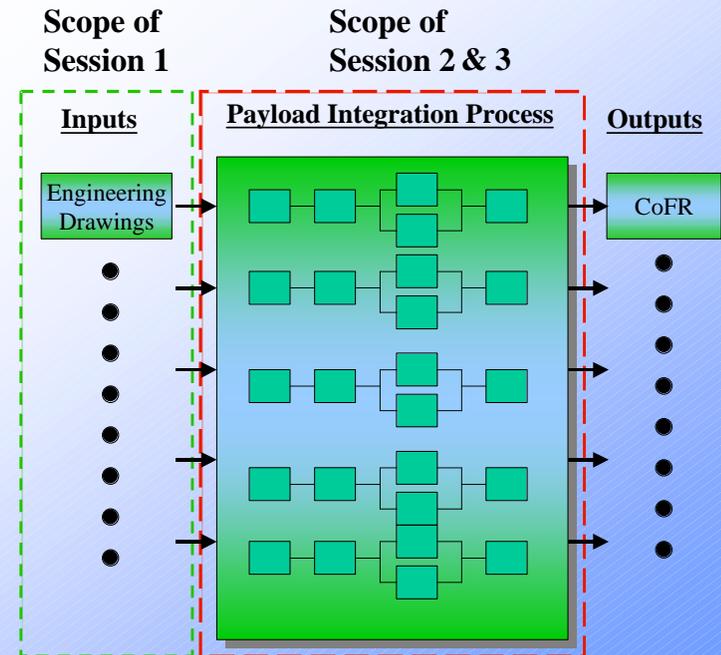
▼ Feb. 25 - 27

### SESSION 5-7: Strategic Session – Process Improvement Approval

▼ Apr/May/July

*Sessions involved key individuals across ISS Payloads Office organization (~40 per session including operations, engineering and integration, KSC ground operations, representative Payload Developers)*

*Key forward actions were established and are being tracked to closure.*



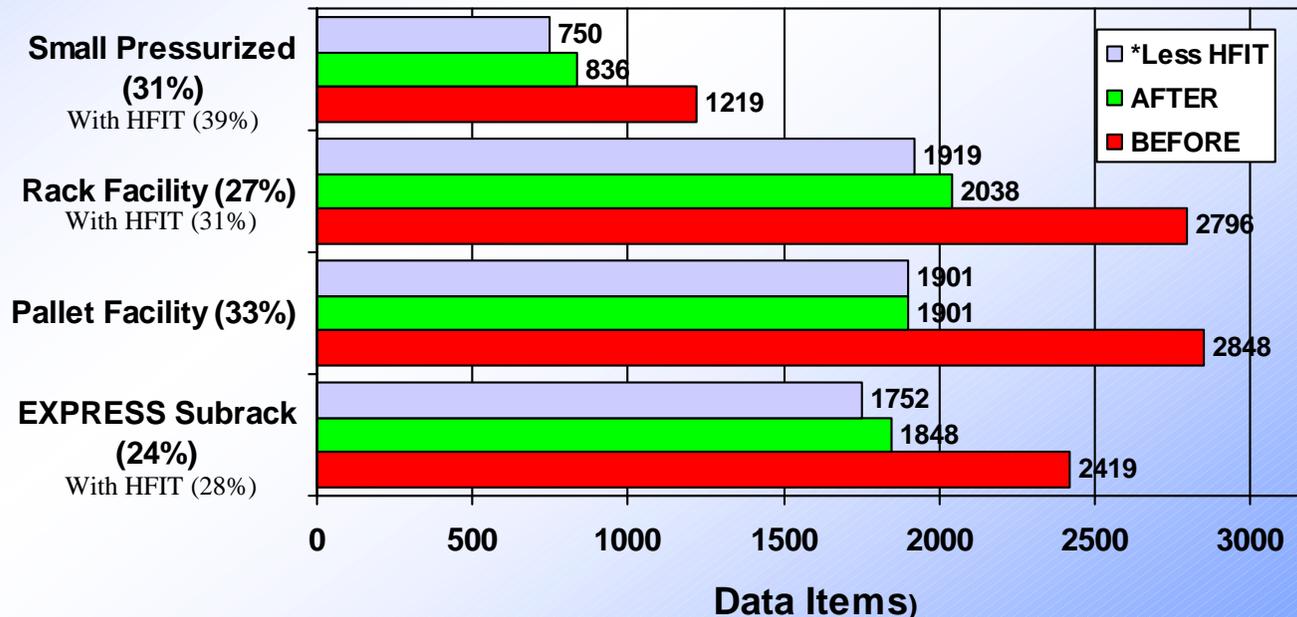
# Results and Forward Actions Schedule...

- **Quarterly Newsletter Implemented** **Nov 2002**
- **Customer Survey Implemented** **Jan 2003**
- **Customer Service Line Implemented** **Feb 2003**
- **Human Factors Integration Team** **April 2003**
  - **Verifies Human Factors Requirements at PD facilities**
  - **As many as 119 requirements performed**
  - **Well-received by several Payload Developers to date**
- **Cold Stowage Process Implemented and on Web Site** **April 2003**
  - **Cold Stowage resources now visible.**
  - **Science use can proceed**
- **Template Changes** **Implemented**
  - **Manifest baseline was I-24 months, is I-16 months**
  - **Procedures baseline was I-19 months, is I-5.5 months**
  - **Planning data submit was I-18 months, is I-12 months**
  - **Training submit was I-24 months, is I-14 months**
  - **Verification submit was I-18 months, is I-7.5 months**
- **Documentation updates** **In work**
- **Data Reductions...**

# Lean Six Sigma Data Reduction

## Key actions:

1. Documentation and data collection tools were assessed to determine redundancy and utility of data being collected across program. Some documents are planned for retirement and others updated to reduce and eliminate data collected from Payload developers. Specific documents assessed and the forward actions for them include:
  - Update SPIPs to ensure program top-down consistency
  - Retire PIA, EIA, and WIA Addenda
  - Develop a Payload Questionnaire to capture early data drops (minimal)
  - Update the Payload Data Sets Blank Book to implement data consolidation changes
  - Update HW ICD content to improve hardware verification accountability
  - Still assessing Configuration Data Set reductions
  - Still assessing overlap between Safety Data Package and Interface Requirements Document



\* Less HFIT = OZ Program Office performs Human Factors verification for Payload Developers

# Documentation Update Schedule

ID	Task Name	March			April			May			June			July			August			Sept
		B	M	E	B	M	E	B	M	E	B	M	E	B	M	E	B	M	E	B
1	<b>SSP 52000-EIA-ERP EXPRESS EIA Blank Book</b>																			
2	<b>SSP 52000-IDD-ERP EXPRESS PL ICD Template</b>																			
3	<b>SSP 57001 Pressurized PL ICD Template</b>																			
4	<b>SSP 57059 Std PIA for Pressurized Payloads</b>																			
5	<b>SSP 57060 PIA Addenda Blank Book for Pressurized PL (RETIRE)</b>																			
6	<b>SSP 57061 Std PIA Blank Book for Attached Payloads</b>																			
7	<b>SSP 57062 Std PIA Addenda Blank Book for Attached PL (RETIRE)</b>																			
8	<b>SSP 57063 Std PIA Blank Book for Small Pressurized PL</b>																			
9	<b>SSP 57064 PIA Blank Book for Small Pressurized PL</b>																			
10	<b>SSP 57004 Attached PL Hardware ICD Template</b>																			
11	<b>SSP 52000-PDS Payload Data Set Blank Book</b>																			
12	<b>Investigation Questionnaire</b>																			
13	Data Dictionary Complete																			
14	Prototyping Complete																			
15	Questionnaire Deployment																			

# Lean Six Sigma Results and Forward Actions...

## *Key actions continued:*

2. Develop and document Payload Integration Manager Standards – Implementation under way.
  - Common set of expectations for PIMs
  - PDs can depend on a standard level of service
  - Internal team members will assist PIMs in their mission
  - Data collection methods and responsibilities are better understood
3. Single, world-class Payload Developer website – activated July 2003
  - Ease access to payload integration processes, requirements, data, etc.
  - Provides access to integration processes
  - Virtual tours of ISS
  - Obtain ISS capabilities data
  - Submit data (Questionnaire) to ISS
  - View approval status of products
  - Post key Points of Contact
4. Determining the feasibility of a single change request form and/or process to access, submit, and status data form submittals. Options and cost under evaluation.
  - Simplify submittal of payload data forms
  - Help minimize non-value work

# Lean Six Sigma Results and Forward Actions...

## *Key actions continued:*

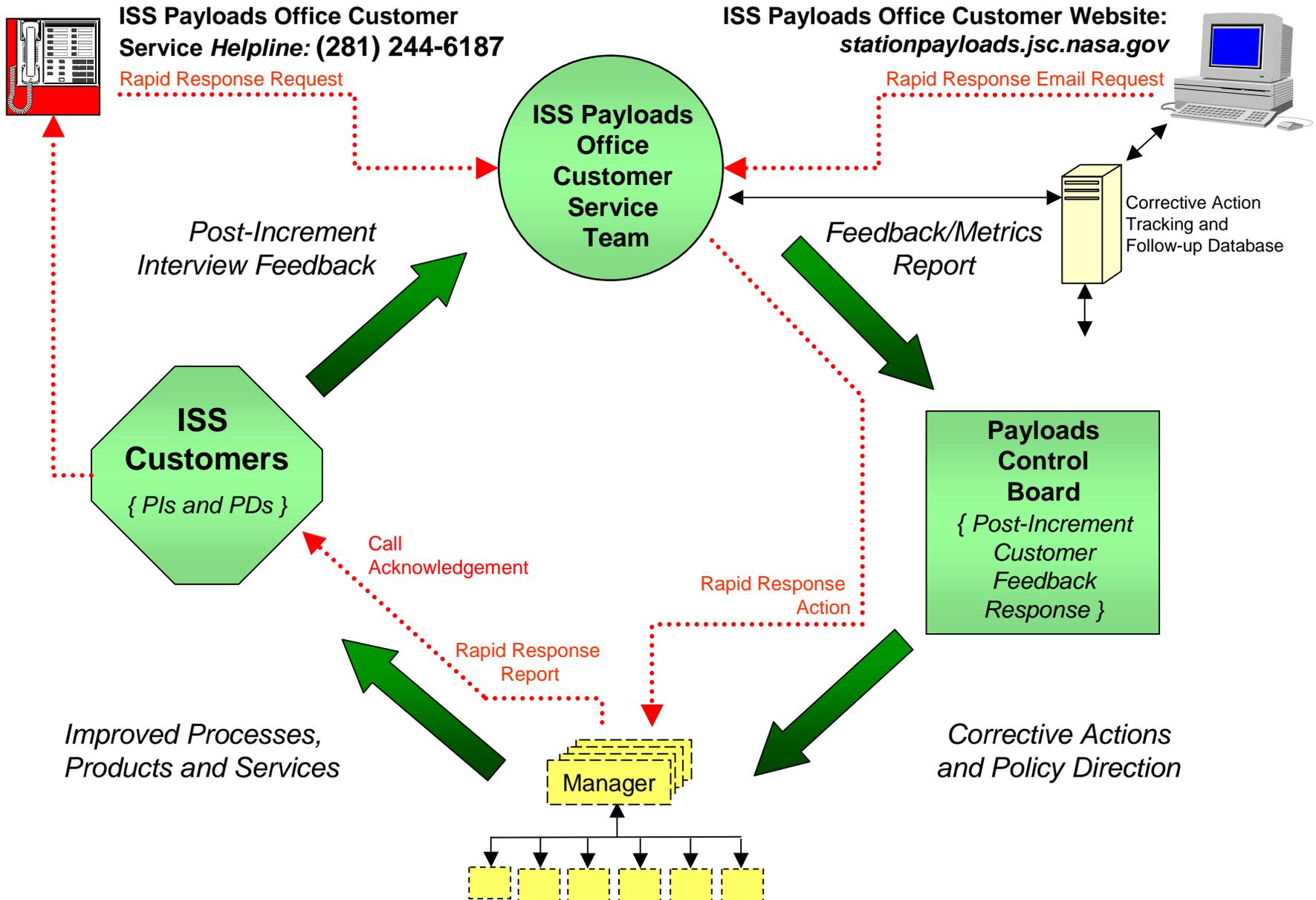
5. Payload Data Library Summit (Summits 1, 2 and 3 completed).
  - Identify overall payload data collection and processing tool goals
  - Solicit input from all users (payload developers and OZ personnel)
  - Target specific tool improvement goals and plans
    - New structure will be payload centric
    - Intent is to not copy payload data from flight to flight, increment to increment when the data is unchanged
    - Only create new version of payload data when data changes
  - Implement data reductions
  - 40+ improvement items have been identified and are being evaluated for implementation
    - Capability to import bulk data (e.g. Excel spreadsheet)
    - Improved navigation to make it easier to get to all payload data
    - Data comparison capability to assist the user in data reviews
  
6. Requirements Change Assessment Report Improvement approved for implementation (Readiness for COFR)
  - Payload Engineering will fill out the RCAR for Payload Developers and ask for signature of concurrence
  - Any additional verifications would be addressed when change is processed

# Lean Six Sigma Results and Forward Actions...

## *Key actions continued:*

7. OZ Cross-Training being developed (implementation in August)
  - Provides cross-functional training targeted for payload integration personnel
  
8. Unilateral Implementation of Requirements Changes (being implemented)
  - Allows pre-implementation of changes to multilateral documents for US entities
  - Minimizes schedule impacts due to International Partner process delays
  
9. Payload Planning versus Allocations Improved (being implemented)
  - Feedback will now be made to Strategic Planning group to aid manifest decision-making
  - Payload crew time requirements collection divided between minimum science requirements and expanded to include “desired” crewtime
  - Documentation of reserve science activities will also be implemented
  - Payload planning will now be able to plan crewtime more accurately to defined minimums and desirements so as to meet and exceed customer expectations.

# ISS Payloads Office Customer Feedback Cycle



# Questionnaire Outline

- **Part 1: Cross-Program Feedback** [*respondent integrates over all Program experiences relevant to a particular question*]
  - Section 1.1 Overall Satisfaction – contains topic areas:
    - *Overall Satisfaction (American Customer Satisfaction Index-ACSI)*
    - *Customer Loyalty*
    - *Research Priorities and Outcomes*
    - *Program Improvements*
  - Section 1.2 Satisfaction with Program Processes – contains topic areas:
    - *Ease of Doing Business*
    - *Payload Data Library*
    - *Payload Integration*
    - *Data and Documentation*
    - *Program Review Processes*
  - Section 1.3 Satisfaction Customer Support Interface – contains topic areas:
    - *NASA Research Program Office support*
    - *PIM/EPIM Services*
    - *Crew Interface: Training and On-Orbit*
    - *Change Requests*
    - *Communication with Support Personnel*
    - *Information Sources*

# Questionnaire Outline [cont.]

- **Part 2: Specific Management / Functional Areas** [*respondent integrates over experiences with specific Program management areas, based on point-of-interaction products and services*]

## Management Areas:

- NASA Payload Development
- Research Program Office Project Management
- Research Planning and Integration
- Mission Integration
- Payload Engineering Integration
- Operations Integration
- Real-Time Payload Operations
- Payload Safety
- Payload Physical Integration

## Points of Interaction:

- Services
- Processes
- People
- Hardware Tools
- Software Tools
- Documents
- Deliverables

- **Part 3: Open-Ended Feedback** [*thematically directed verbal comments*]
  - Lessons Learned
  - Program Strengths
  - Program Weaknesses
  - Roll-up Comments
- **Part 4: Survey Feedback** [*survey about the survey*]
  - Interview Method
  - Questionnaire Content and Design

# ISS Utilization Customer Satisfaction Overview – Mean Values (6/11/03)

Mean values of ratings given by all interviewees, i.e., Payload Developers (PDs), Principal Investigators (PIs) and dual-role PDs-PIs, in response to selected questions from the ISS Utilization Survey. Increment 5 comprehensive data are published in the "ISS Payloads Office Customer Satisfaction Survey Final Report and Analysis of Results – Increment 5 (May 2003)."

Survey Questions	Rating Scale 1=Low, 5=High	Increment 5	Increment 6	Increment 7	Increment 8
- Overall satisfaction } - Expectations met } OSI* - Ideal organization }	100				
	80				
	60	60 ■	TBD	TBD	TBD
	40				
	20				
Satisfaction with experience for current Incr. vs. previous Incrs.	5 4 3 2 1	4.0 ■	TBD	TBD	TBD
Satisfaction with overall ease of doing business with ISS Program	5 4 3 2 1	3.3 ■	TBD	TBD	TBD
Satisfaction with priority given to research during current the Increment	5 4 3 2 1	3.9 ■	TBD	TBD	TBD
Satisfaction with amount of raw data collected during Increment	5 4 3 2 1	3.4 ■	TBD	TBD	TBD
Satisfaction with ISS end-to-end payload integration process	5 4 3 2 1	3.6 ■	TBD	TBD	TBD
Satisfaction with amount of data & documentation required by NASA	5 4 3 2 1	3.2 ■	TBD	TBD	TBD

•Overall Satisfaction Index (OSI) score for ISS Utilization Program is obtained by taking basis question ratings on a 1 to 10 scale, converting to 0 to 100, and then averaging.

Note: Trending (via line graphing) will be depicted by the addition of survey results from future Increments upon their completion.

# ISS Utilization Customer Satisfaction Overview – Median Values (6/11/03)

Median values of ratings given by Payload Developers (PDs), Principal Investigators (PIs) and dual-role PDs-PIs in response to selected questions from the ISS Utilization Survey. Increment 5 comprehensive data are published in the

“ISS Payloads Office Customer Satisfaction Survey Final Report and Analysis of Results – Increment 5 (May 2003).”

Survey Questions	Increment 5	Break-Down	Increment 6	Break-Down	Increment 7	Break-Down	Increment 8	Break-Down
- Overall satisfaction - Expectations met - Ideal organization	Overall Satisfaction Index (OSI)* score for ISS Utilization Program = 60 out of 100		TBD		TBD		TBD	
Satisfaction with experience for current Incr. vs. previous Incrs.		PDs PIs Dual	TBD	PDs PIs Dual	TBD	PDs PIs Dual	TBD	PDs PIs Dual
Satisfaction with overall ease of doing business with ISS Program		PDs PIs Dual	TBD	PDs PIs Dual	TBD	PDs PIs Dual	TBD	PDs PIs Dual
Satisfaction with priority given to research during current the Increment		PDs PIs Dual	TBD	PDs PIs Dual	TBD	PDs PIs Dual	TBD	PDs PIs Dual
Satisfaction with amount of raw data collected during Increment		PDs PIs Dual	TBD	PDs PIs Dual	TBD	PDs PIs Dual	TBD	PDs PIs Dual
Satisfaction with ISS end-to-end payload integration process		PDs PIs Dual	TBD	PDs PIs Dual	TBD	PDs PIs Dual	TBD	PDs PIs Dual
Satisfaction with amount of data & documentation required by NASA		PDs PIs Dual	TBD	PDs PIs Dual	TBD	PDs PIs Dual	TBD	PDs PIs Dual
	1 Low 2 3 4 5 High		1 Low 2 3 4 5 High		1 Low 2 3 4 5 High		1 Low 2 3 4 5 High	

\*OSI is obtained by taking basis question ratings on a 1 to 10 scale, converting to 0 to 100, and then averaging.

# Results of Survey

- The Increment 5 data confirms we are on the right track with our process improvement target areas
  - Payload integration is difficult and requires too much data and paperwork
  - The Payload Data Set/Payload Data Library usage is problematic—the electronic data requirements collection strategy needs improvement
  - Crew access is vital to research
- Some positive feedback on what we are doing well...
  - Customer overall satisfaction is better than expected
  - ISSP personnel are highly motivated, professional and competent—a true asset to the program and a bright spot for the customer – great reports on KSC and Research Program Offices
  - Many customers would choose to fly again
  - Many customers have observed significant improvements

# Recommendations

- The Customer Support Team conducted an analysis of the survey results and offers recommendations to the PCB for Corrective Actions
  - 15 Recommendations based on CST interpretation of customer feedback
- PCB formulated consensus on Increment 5-based Corrective Actions
- PCB directed Corrective Actions will be posted to Customer Website along with Increment 5 Report summary briefing
  - Customer Support Team will administer Corrective Action database and facilitate actionee status reporting
  - PCB closure required

# Forward Actions

- Increment 6 survey/interview period began June 16 and runs through early August.
  - High percentage of I6 customers also participated in I5
    - Opportunity to highlight improvements or deterioration in service
  - I6 Final Report targeted for August release
- Customer Website active
  - In addition to Payload Developer “portal” to Program payload integration sites/tools, ISS Payloads Office is supporting a “Customer Service Center” that includes:
    - Electronic “Customer Helpline” similar to telephone-based system
    - Customer Suggestion Box
    - “Customer Forum” link to current and previous Customer Feedback reports, briefings and metrics
    - Process Improvement news and the Corrective Actions Status Log

# Summary

**Implement The  
Ongoing  
Research Program**

- **Research Program is being implemented**
- **Research is being done on orbit now**
- **Tactical plans baselined through May '04**
- **Replan baselined and in integration process**

**Provide Multi-  
Discipline  
Capability to ISS**

- **First 7 Racks are On Orbit and Checked Out**
- **Three more will be delivered on ULF1**
- **Vigorous effort is under way to work with IPs as their labs come on line**

**Increase  
Research Capacity**

- **Resource Availability is increasing**
- **Middeck Resources at 20/flight**
- **Crew Time being addressed to increase schedulable time**
- **Ku Downlink rate to be 150 Mbps by end of 2004**

# Backup

# Lookahead

	2001		2002			2003				2004				2005				2006				2007				2008																							
	On Orbit	Mar	May	Oct	Nov	Mar	Apr	May	Aug	Oct	Jan	Feb	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Mar	Jul	Oct	Jan	Apr	Jun	Nov	Jan	May	Jul	Oct																			
Carrier		SO	MPLM	SI	P1	MPLM	P3/P4	Shab	Unpre	Shab	SG	Node2	MPLM	Columbia	MPLM	Unpress	MPLM	Unpress	MPLM	ELMPS	JEM	MPLM	MSM	CAW	EF	MPLM	Unpress	MPLM	Unpress	MPLM																			
Crew Rot.			C		C			C		C		C		C		C		C		C		C		C		C		C		C																			
Flight #		8A	UF2	9A	11A	ULF1	12A	12A.1	13A	13A.1	15A	10A	ULF2	1E	UF3	UF4	UF5	UF4.1	UF6	1JA	1J	ULF3	9A1	UF7	2JA	ULF5	14A	TBD	TBD	TBD																			
Human Research	HRF1					HRF2									MARES																																		
Bio. Astr. Tech.																																																	
Fund. Space Bio.															HR1									Rot.																									
Fluids and Comb.													CIR			FIR														HR2																			
Materials Sci																	MSRR1																																
Matcom																																																	
Biotechnology																																																	
X-Ray Crystallography																																																	
Multipurpose	ER1, ER2A, ER4 ER5		ER3A										ER6													ER7A		ER8A																					
MELFI/Cryo						MELF1																								Cryo																			
Glove Boxes			MSG																		LSG																												
WORF						WORF																																											
NASDA ISPRs																																																	
ESA ISPRs														ESR																																			
														FSL																																			
														EDR																																			
														EPM																																			
														Biolab																																			
NASA Truss																														EP1																			
NASA JEM EF																																																	
NASDA JEM EF																																																	
ESA Attached																																																	
NASA-ESA Attached																																																	
ISPR Slots Available		10	10	10	10	10	10	10	10	10	10	10	12	12	22	22	22	22	22	22	22	22	33	33	33	37	37	37	37	37	37																		
ISPRs Filled		6	7	7	7	10	10	10	10	10	10	10	10	12	17	20	20	21	21	22	22	25	25	25	25	25	26	26	28	28	29																		
						Canadian Subrack Payloads																																											
MELFI EXCHANGE													MELF1		0		MELF1																																

# Lean Six Sigma Results and Forward Actions...

Data Dictionary Metrics												
Item#	Doc. Number	Revision	Release Date	Doc. Title	Doc. Owner	Control Board	# Data Item (BEFORE)	# Data Item (AFTER)	# Data Item Reduced	% Reduction	Team	Type of Payload
1	NSTS 13830	C	Jul-98	Payload Safety Review and Data Submitted Requirements	Harold Taylor	PSRP	73	73	0	0	MI	All
2	SSP 52000-EIA-ERP	A	Feb-01	Express Integration Agreement Blank Book for Express Rack Payloads	Dan Jett	PCB	324	77	247	76.23%	MI	Subrack
3	SSP 52000-IDD-ERP	D	Aug-02	Express Payload ICD Template	Dan Jett	PCB	562	562	0	0.00%	MI	Subrack
4	MR Loader Form	N/A	N/A	Manifest Request Loader Form	Jim Scheib	PMIT	36	36	0	0.00%	MI	All
5	CEF Form	CF Rev 3	N/A	Payload Change Evaluation Form	Jim Scheib	PMIT	47	23	24	51.06%	MI	All
6	SSP 57001	D	May-03	Pressurized Payload Hardware ICD Template	Wade Geiger	PCB	675	698	-23	-3.41%	MI	Rack
7	SSP 57010	C	Oct-03	Generic Payload Verification Plan	Wade Geiger	PCB	182	0	182	100.00%	MI	Rack
8	SSP 57059	Baseline	Aug-01	Standard Payload Integration Agreements for Pressurized Payload	John Selmarten	PCB	22	8	14	63.64%	MI	Rack
9	SSP 57060	Baseline	Aug-01	Payload Integration Agreement Increment Addendum Blank Book for Pressurized Payloads	John Selmarten	PCB	275	0	275	100.00%	MI	Rack
10	SSP 57004	Baseline	Aug-02	Attached Payloads Hardware ICD Template	Bill Corley	PCB	519	519	0	0.00%	PEI	Pallet
11	SSP 57061	Baseline	Aug-01	Standard Payload Integration Agreement for Unpressurized Payloads	John Selmarten	PCB	49	50	-1	-2.04%	MI	Pallet
12	SSP 57062	Baseline	Aug-01	Payload Integration Agreement Increment Addendum Blank Book for Unpressurized Payloads	John Selmarten	PCB	638	0	638	100.00%	MI	Pallet
13	SSP 57063	Baseline	Jan-02	Standard Payload Integration Agreements for Small Pressurized Payloads	John Selmarten	PCB	0	0	0	0.00%	MI	Small PL
14	SSP 57064	Baseline	Jan-02	Payload Integration Agreement Blank Book for Small Pressurized Payloads	John Selmarten	PCB	218	145	73	33.49%	MI	Small PL
15	52000-PDS	C	Aug-01	Section 3.0 Points if Contact	James	PCB	45	0	45	100.00%	POIF	All
16	52000-PDS	C	Aug-01	Sec. 4 Payload Training	Sanchez	PCB	84	79	5	5.95%	POIF	All
17	52000-PDS	C	Aug-01	Sec. 5 Ground Data Service	Hiley	PCB	292	50	242	82.88%	POIF	All
18	52000-PDS	C	Aug-01	Sec. 6.6 Payload Operation Data Set	Galloway	PCB	36	36	0	0.00%	POIF	All
19	52000-PDS	C	Aug-01	Sec. 6.8 & 6.9 Payload Operation Data Set	James	PCB	63	0	63	100.00%	POIF	All
20	52000-PDS	C	Aug-01	Sec. 7 KSC Support Requirements	Schlierf	PCB	49	49	0	0.00%	KSC	All
21	52000-PDS	C	Aug-01	Sec. 8 KSC Technical Requirements	Cleo	PCB	41	41	0	0.00%	KSC	All
22	52000-PDS	C	Aug-01	Sec.9.3.1& 9.3.2 Payload Configuration Set	Wilbanks	PCB	48	27	21	43.75%	PEI	All
23	52000-PDS	C	Sep-01	Sec. 9.3.3 Payload Configuration Set	Bay	PCB	52	80	-28	-53.85%	MI	All
24	52000-PDS	C	Aug-01	Sec. 10 Payload Planning Data Set	Davis	PCB	113	110	3	2.65%	POIF	All
25	52000-PDS	C	Aug-01	Sec. 11 Payload Procedure and Display	Galloway	PCB	22	20	2	9.09%	POIF	All
26	D683-35491-1	C	Jun-00	Express Rack Payload Configuration Data Set Definition	Susan Wilson	N/A	66	52	14	21.21%	PEI	Subrack or Subpallet
27	D683-35474-1	C	May-02	Express Rack Payload Command and Data Handling Data Set Definition	Benny Hornsby	PSCP	466	466	0	0.00%	PSI	Subrack or Subpallet
28	SSP57002	B	Jul-02	Payload Software ICD Template	Hye	PCB	641	641	0	0.00%	PSI	Rack or Pallet
29	Questionnaire	Baseline	May-03	Investigation Questionnaire	Polz	N/A	0	67	-67	NEW	MI	All
							5638	3909	1729	30.67%		