ARES CORPORATION

Risk Management Conference VI

Risk Management Best Practices and Lessons to be Learned

December 8, 2005

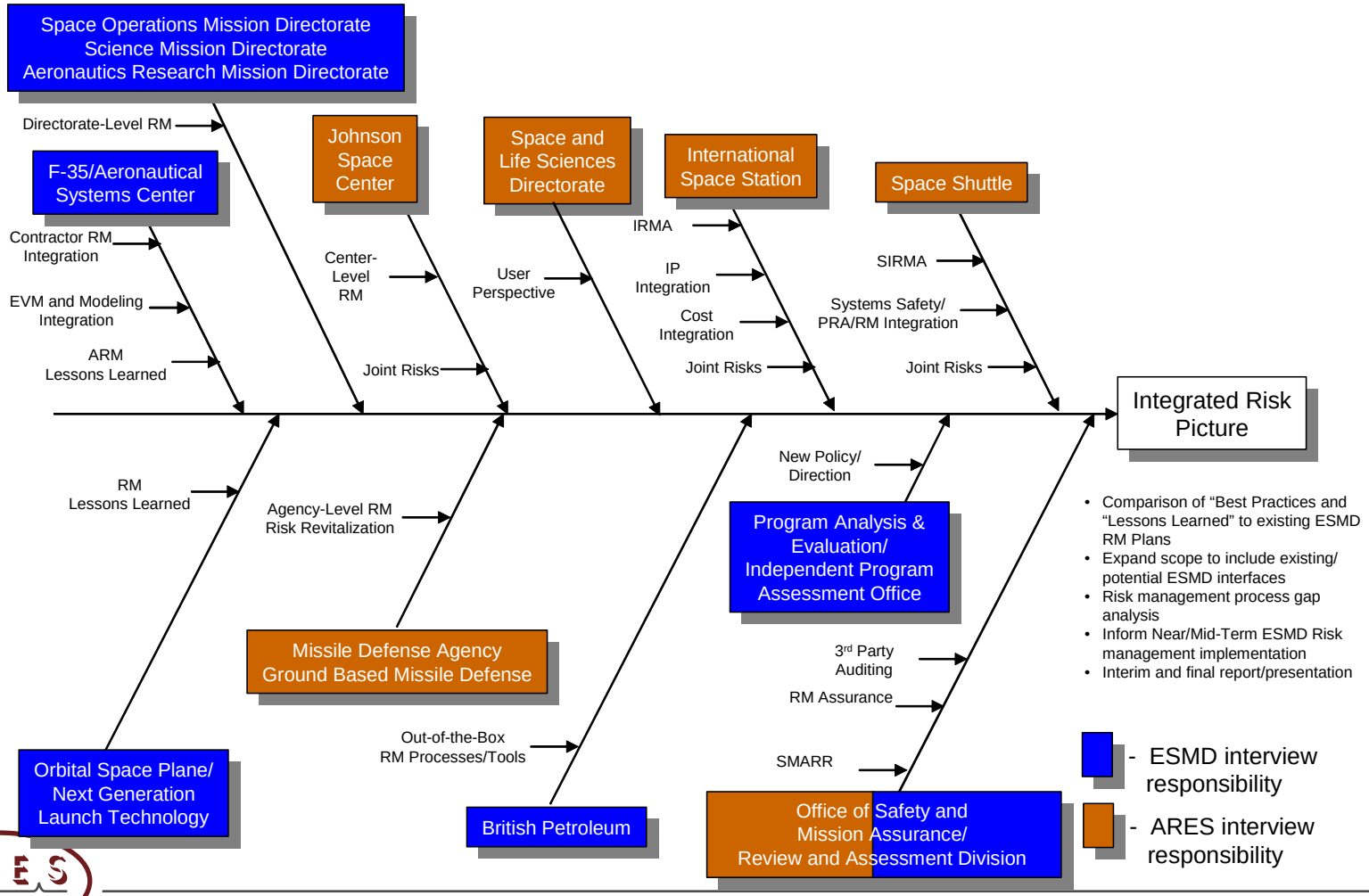
Background

- The Exploration Systems Mission Directorate is currently defining their Risk Management Program
- ESMD determined a Risk Management Benchmarking effort should be undertaken
- Effort was begun with a kickoff session at NASA HQ in May
- A series of interviews with Risk Management implementers and users was conducted - split between NASA ESMD and ARES based primarily on geographical location
- This effort allowed us to talk to numerous RM practitioners and users
  - *Large, complex NASA organizations similar in nature to ESMD programs*
  - *Large, complex external organizations similar in nature to the ESMD programs*
  - *Users/Interfaces with the ESMD RM program*
  - *Other RM practitioners*

Background

- Planned Approach

RM Benchmarking & Integration Report



Completed Interviews

Interviewee	Title/Organization	Benchmark Category	Interview Date
Jeevan Perera	Risk Manager, JSC Safety and Mission Assurance (S&MA) Office	3	May 12, 2005
John Turner	Risk Manager, Space Shuttle Program Office	1	May 13, 2005
Mike Stamatelatos, Homayoon Dezfuli	Division Chief, HQ OSMA, Safety and Assurance Requirements Division	3	May 16, 2005
Bonnie Dunbar	Associate Director & Risk Manager, JSC Space and Life Sciences Directorate (SLSD)	3	May 17, 2005
Mike Lutomski	Risk Manager/International Space Station (ISS) Program Office	1	May 19, 2005
Steve Newman, Steve Wander	Division Chief, HQ OSMA, Review and Assessment Division (RAD)	3	May 20, 2005
Mike Canga	Risk Management Assessor/Independent Program Assessment Office (IPAO)	3	May 20, 2005
Charlie Cockrell, Bob Wingard	Instructors, Risk Management Corporation	4	June 1, 2005
Orlando Figueroa	Deputy Associate Administrator, Science Mission Directorate (SMD)	3	June 3, 2005
Dan Yuchnovicz	Systems Engineer/NASA Engineering and Safety Center	3	June 10, 2005
Yuri Gawdiak	Aeronautics Research Mission Directorate (ARMD)	3	June 17, 2005
Ron Moyer	HQ OSMA, Review and Assessment Division (RAD)	3	June 23, 2005
Walt Hussey	NASA Independent Technical Authority	3	June 28, 2005
Audrey Johnson	Risk Manager, Ground-Based Missile Defense – Missile Defense Agency	2	July 28, 2005
Hugh Lynn	Risk Manager, Joint Strike Fighter Joint Program Office	2	August 8, 2005

Key Observations

- Importance of obtaining top management buy-in
  - Senior management acceptance of risk management is critical to the success of the effort
- Importance of phasing-in risk management programs to avoid overpowering Programs
  - Risk management is often misperceived warily as additional work with little additional value – a phased-in approach increases the likelihood of success
- Importance of linking risk and budget
  - Program participants take risk very seriously when budget decisions are made based on risk
  - Tying risk to budget/management reserve allocation significantly increases the acceptance of the risk management program
- Ensuring RM tools and processes should be easy to use and require only short training courses
  - To be successful, the use of risk management tools and processes must be virtually intuitive
  - Busy Program personnel will quickly show their disdain for complex, hard-to-use tools and processes

Key Observations

- Importance of Risk Management Focal Points in all participating organizations
  - An “in-country” point-of-contact within the risk identifying and mitigating teams bridges the gap between the technical personnel and the risk practitioners
- Importance of ensuring RM training requirements, deliverables and expectations are clearly laid out in contracts
  - To get contractors to effectively participate in RM processes, well-defined requirements and DRDs must be included in contracts
- Importance of consolidating traditional NASA risk tools and processes with more recent continuous risk management processes
  - NASA has always done risk management in some form but only relatively recently has a disciplined, comprehensive approach to managing risk been implemented
  - Further aligning (as appropriate) the traditional tools and processes with the rigorous Risk Management process is beneficial
- Importance of having a robust quantitative risk assessment team
  - QRA adds fidelity to the risk analyses that must be performed
  - QRA capabilities bring a unique, value-added tool for assisting the program in decision-making

Key Observations

- Ensuring “Top-X” risk lists do not downplay other significant risks
  - Even risk # 18 can occur and significantly impact the program – not all the attention should be given to an arbitrary number of top risks
- Importance of consistent Human Space Flight RM Processes and Tools
  - Consistent processes and tools for RM among various human space flight programs improves integration and promotes understanding
- RM program metrics are difficult

Conclusions

- Risk Management Benchmarking has been a very valuable exercise
  - Allowed us to learn practical lessons from other similar organizations
  - Also, gave us an opportunity to gather important philosophical concepts from key personnel in the agency
- ESMD is uniquely positioned within NASA to
  - Learn the lessons from more mature NASA and external programs
  - Further the incorporation of effective risk management within NASA by striving forward in new and innovative risk approaches