GPS III Independent Program Assessment Lessons Learned – From IPA Failure to Mission Success

Jill A-C Hardash
Booz Allen Hamilton
5220 Pacific Concourse Drive, Ste 200
Los Angeles, CA 90045
(310) 297-2126
Hardash_Jill@bah.com

Mike Dunn
Department of the Air Force, GPS Wing
483 N. Aviation Boulevard
El Segundo, CA 90245-2808
(310) 653-3006
Mike.Dunn@losangeles.af.mil

Abstract—Through the National Security Space Acquisition Policy (NSSAP) 03-01 the United States Air Force requires an Independent Program Assessment (IPA) prior to each Key Decision Point (KDP) program milestone decision by the Defense Space Acquisition Board (DSAB). The goal of an IPA is to ensure a program is ready to pass into the next milestone. During the IPA process the acquisition experts on the IPA review team share a wealth of experience and ideas with the program. A good IPA makes a significant impact on a program, helping to establish a solid foundation early, move forward with critical processes in place and share experience during program execution. Despite a strong acquisition team on the Global Positioning System (GPS) III program that had been trying to move the program forward past Phase A for almost 10 years, the first IPA visit in summer of 2007 was unsuccessful. Through a myriad of initiatives, actions, and lessons learned, the GPS III IPA lead worked with the GPS III team to change the red and yellow of the failed KDP-B IPA ratings to green. This paper focuses on the IPA process, lessons learned and the tools and methods from mundane to sublime that brought the GPS III IPA from failure to the best in recent SMC history. The extensive IPA preparations, execution and lessons learned that put the program back on a solid footing with the objective of achieving a successful IPA are detailed. Additionally, the processes, tools and methods established as a result of the IPA to help the program during execution and in preparation for the KDP-C are also discussed. The goal of this paper is to pass on the knowledge from months of preparation and direct involvement with the KDP-B IPA team to successfully answer their questions, meet the their objectives, and see the results briefed out at a successful DSAB review that allowed the GPS III program to move forward into the Design Phase and official Program Initiation.[1][2]

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[1] "U.S. Government work not protected by U.S. copyright."

[2] IEEEAC paper#1353, Version 3, Updated January 9, 2009

1. INTRODUCTION

Acquisition and development of major Air Force space systems is governed by National Security Space (NSS) Acquisition Policy NSS 03-01. The NSS 03-01 Acquisition Lifecycle is conducted in a series of phases, with specific content, entrance and exit criteria. Readiness to transition from one phase to the next is determined at Key Decision Point (KDP) milestones by the Defense Space Acquisition Board (DSAB) chaired by the Milestone Decision Authority (MDA). An Independent Program Assessment (IPA) is a critical input into that decision process.

The Global Positioning System (GPS) Wing has 650 military, civilians, Aerospace, and systems engineering contractors. GPS III was a major new spacecraft development program in Acquisition Phase A that tried to move forward past Phase A for almost 10 years. Unfortunately the first IPA visit in summer of 2007 was unsuccessful, with numerous "red" ratings. The Air Force and OSD want increased discipline in the acquisition process to ensure program success, so "red" findings put the IPA and KDP Milestone Review at risk. Through a myriad of initiatives, actions, and lessons learned, the GPS III IPA Lead worked with the GPS III team to change the red and yellow of the failed KDP-B IPA ratings to green.

2. IPA PROCESS SUMMARY

Phases of NSS 03-01 Acquisition Lifecycle

There are four major program phases (Phase A through Phase D) to an NSS 03-01 Acquisition Lifecycle. There are three Key Decision Points, KDP-A, KDP-B and KDP-C that are made to move from one phase to the next.

Programs begin with Pre KDP-A Concept Studies that include development of System Concept of Operations (CONOPS), Architectures, and an Analysis of Alternatives

(AoA) Report. Following a successful KDP-A milestone decision, the program moves into Phase A Concept Development Phase that includes concept studies and definition, requirements definition, risk reduction, and conduct of a System Requirements Review (SRR) and a Systems Design Review (SDR). Following a successful KDP-B milestone decision, the program moves into Phase B Preliminary Design Phase that includes validation of system alternatives, performance analysis, additional risk reduction, and conduct of a Preliminary Design Review (PDR). Following a successful KDP-C milestone decision, the program moves into Phase C Complete Design Phase to complete the baseline design and a Critical Design Review (CDR). After a successful Build Approval decision, the program moves into Phase D Build and Operations Phase.

IPA Within the KDP Process

Prior to each DSAB, the DoD Space MDA will convene an IPA Team (IPAT) to advise him on the program's readiness to advance into the next acquisition phase. The IPAT's findings and recommendations are presented to the DoD Space MDA at the DSAB for each KDP and Build Approval. In preparation for the IPAT, the Program Manager produces a consolidated set of program documentation, known as an Integrated Program Summary (IPS), to facilitate the IPAT review. Details concerning the IPA and IPS are described in NSS 03-01 Appendix 2 and 4.

The DoD Space MDA convenes a DSAB for each KDP to obtain advice and information for a decision to proceed into the next acquisition phase. This decision authorizes the Program Manager to perform appropriate activities in accordance with the approved Acquisition Strategy Document (ASD) and Acquisition Decision Memorandum (ADM). The DoD Space MDA will determine the scope of the program review and may direct other MDAP systems that interact with or are impacted by the program under consideration to participate in the IPA process.

The IPAT determines if the program is ready to transition into the next Phase and advises the MDA. It reviews the IPS and other documents, asks in-depth review questions, completes other analyses, and reviews the Integrated Cost Evaluation (ICE) or Integrated Cost Analysis (ICA). It conducts a first order review of the program, identifies and resolves key issues, and does an in-depth exploration of critical issues. It documents its assessments of program status, exit criteria, and alternatives. It reviews and provides comments on the ICE or ICA, prepares a draft ADM, and gives a final briefing to the DSAB. Figure 1 shows the common IPAT inputs, activities and products.

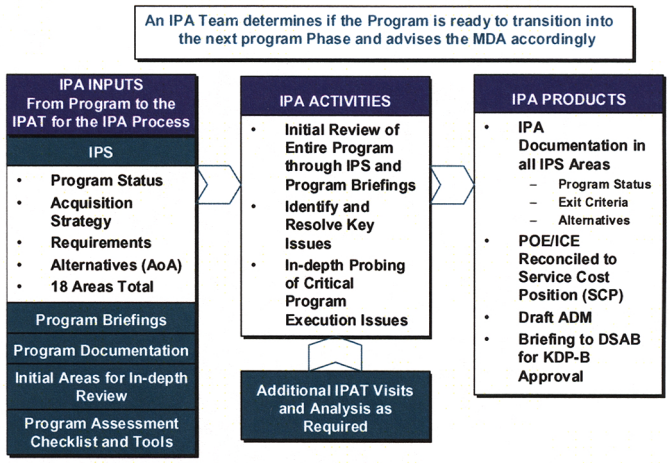


Figure 1: The IPA Process – Inputs, Activities, and Products

A formal letter from the Program Office to the MDA requesting an IPA initiates the process. After a DSAB planning meeting as the starting point, a DSAB is scheduled on Day 140. The ICA/ICE starts on Day 15 with final preparations for IPA Readiness Review on Day 60. The ICA/ICE process within the IPA process is shown in Figure 2 below.

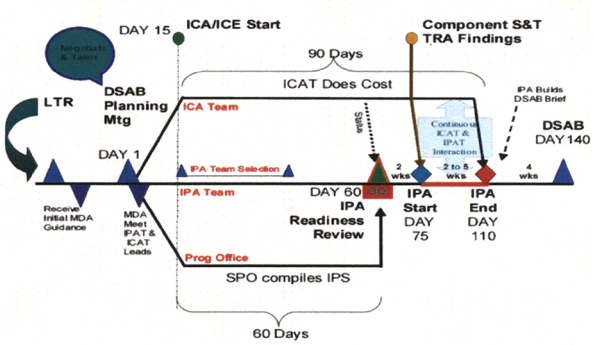


Figure 2: ICA/ICE Process in relation to the IPA

The IPA, including ICE and Technology Readiness Assessment (TRA), ends on about Day 110, 4 weeks before the DSAB. The time between the formal IPA close and the DSAB briefing is spent preparing pre-briefs and then the final DSAB brief to the MDA. Both the IPA Chair and the Program Director prepare independent briefings to inform the MDA on the program status and issues for the decision.

Although MDA responsibility was previously delegated to the Secretary of the Air Force or re-delegated to the Under Secretary of the Air Force (Space), for the GPS III DSAB the MDA was USD (AT&L).

Leading up to the final decision briefing with the MDA there are numerous pre-briefs of the Program from the Program Manager and the IPA Chair. During these

meetings the Program Manager presents the status and readiness for KDP-B and the IPA Chair presents the IPAT opinion of program readiness for KDP-B based on their analysis. The primary GPS III briefing trail to DSAB was as follows:

❍ PEO (Space)	Lt Gen Hamel
❍ SAF/USA	Maj Gen McCasland
❍ Deputy USECAF	Mr Peyton
❍ OSD & STRATCOM	As required by IPS
❍ DSAB Working Group	Mr Eveland, NII
❍ IPA	Maj Gen (ret) Tourino
❍ SECAF	Mr Wynne
❍ USD (AT&L) Assist	Mr Hartman
❍ USD (AT&L)	Mr Young

One of the key slides that the IPA Chair briefs in every pre-brief and in the final briefing to the MDA is the Key Assessment Summary. It is the capstone for all of the detail assessment charts in the IPA briefing and may be the only slide shown for discussion purposes. The final GPS III Assessment Summary slide that was presented to the MDA is shown below in Figure 3. This format shows all 18 IPS areas and provides the MDA with a quick view program assessment based on the stoplight color format. To have a successful assessment there should be mostly green with some yellow and no reds on the summary. The 18th IPS area, "Recommendations" does not have a color rating as it is product of the final KDP-B meeting with the MDA. As the GPS III IPA progressed from the initial IPA visit where the colors in the IPS areas were mostly reds and yellows the assessment transformed into the final result shown here of greens and yellows.

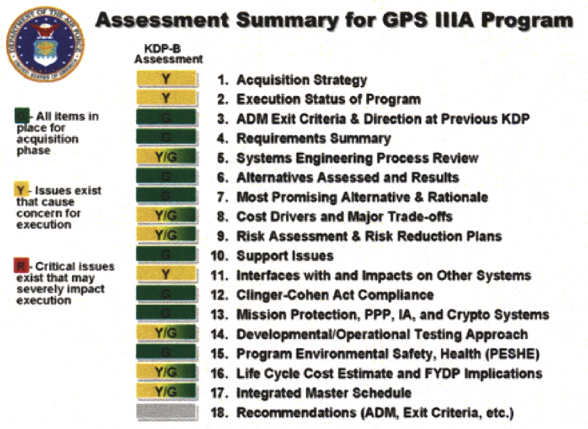


Figure 3: IPA Team Key Assessment Summary Slide

3. Overall IPA Lessons Learned

In order to properly prepare for and support the IPA, the Program Office must read and understand the intent and basic requirements in NSS 03-01. It should be prepared to exceed basic requirements. It should also tailor requirements to the program as appropriate to ensure the information provided to the IPAT is as clear and comprehensive as possible.

Leadership and Team

Strong leadership and meticulous preparation are the most important keys to success. IPA preparation is an opportunity for the Program Manager to garner experience, to gain support, and to obtain an outside perspective that will be valuable for the program's success. It's important to know what's right for the program and plan the way ahead.

Getting the right people involved is important. Senior leadership participation, review, and support are critical. The initial days of the IPA should be well attended by senior leadership to present the program overview, give the IPA a general sense of how the program is run, what the major issues are and how equipped the team is to resolve them during program execution. If the leadership is not made available to the IPA it could send a message that the program is either in trouble or is too understaffed to successfully execute the program in the future. This is the wrong message to send and generally not the intention.

KDP Products and Approvals

The program needs to understand the KDP products required and the schedule lead times required to obtain signatures. Many of the required documents have long lead times for coordination and signatures. Unfortunately many of these signature and review processes are out of the Program Manager's direct control, so starting early is vital. Once the IPA Team arrives for the assessment these documents need to be completed and have already cleared signatures in the Program and Wing. Once these documents are out for coordination and signature outside the Wing a Program representative should be responsible for tracking and shepherding these documents through Headquarters and Pentagon approval cycles. Without this active work to manage the progress of the documents, facilitate additional information requests and ensuring the approver understands the associated deadlines there is a risk that the documents will delay the DSAB date and ultimately the program approval. The Program Office should work hard to get all documents in the IPS fully approved prior to arrival of the IPA. If documents are not fully approved prior to IPA arrival the issues should be identified to the IPA and their assistance to get the document back on track for approval should be requested. The IPAT members may be often able to leverage their organizations and contacts to keep these critical documents moving through the approval cycle.

Program Manager's Approach

The IPAT visit is a significant opportunity for the Program Manager to learn and move his program forward. Having the right frame of mind before the IPAT visits is essential.

The IPAT is really there to help the program be successful and provides a unique opportunity for the Program Office to make a strong statement that: "This is my program, we love doing this, and we are ready to execute!" Taking this positive approach can become a self-fulfilling prophecy. Often the program gets so busy in day-to-day Government activities that it loses focus on what's important. Rarely is the Program Manager's team afforded such a unique opportunity to step back, think about the challenges, and figure out for themselves what they want to do. Taking advantage of the chance to have a lot of positive interaction with the members of the IPAT just makes basic common sense.

What's at stake here is not just an ordinary program, but acquisition of a nationally critical asset. It is important to remember that the product coming from a program like GPS III is far more than just an Air Force asset. It is a national asset and indeed a global asset, in GPS III's case.

Motivation, Planning and Empowerment

GPS III is in far better shape now than it was before the IPA. The IPA was a key motivator for empowerment of the Air Force Program Manager with the appropriate responsibility, accountability, and authority. In fact, the Program Manager and the key Program staff all had to prepare Responsibility, Accountability and Authority (RAA) documents that were included as an appendix to the Wing System Engineering Plan (SEP) in the GPS III Annex. The IPA was also a key forcing function to enterprise wide program efforts to complete essential documentation, including Test and Evaluation Master Plan (TEMP) completion, build up of critical manpower and expertise, initiation of a detailed training plan, helping to motivate up-front investments in risk reduction, beginning to address issues like crypto needs, Parts, Materials, and Process Management, and improving the effectiveness of the organizational structure. The required KDP-B product documentation as discussed earlier in the "KDP Products and Approvals" subsection is outlined in NSS 03-01. The build up of critical manpower expertise was essential and allowed the Program Manager to identify positions in the organization that would need to be filled to fully staff the program for successful execution. Understanding these needs and gaps before entering Phase B allowed the Program Manager time to request personnel to fill these positions in a timely manner. Training was another area that the IPA weighted heavily to ensure each member of the program had "back to basics" training on how to execute the program on topics ranging from conducting an IBR to the Program's Risk Process. All of these basic activities were completed at the IPA request and as a result set the Program up with useful tools for success.

Solid Foundation for Program Success

Of all these, recommendations to address issues with the organizational structure, make it more responsive to program needs, and ensure a sound foundation for program success was arguably the IPA's #1 concern. The IPA continually asked themselves questions about the Program Office like:

- Do they feel like they own the program?
- Are they empowered?
- Do they have the necessary talent and manning?
- Have they identified the critical risks?
- Are resources available for second sources?
- Is there support and horsepower behind them?
- Do they have the training and expertise??
- Can they get job done quickly and efficiently?

These questions lead to many of the recommendations that the IPA left the GPS III program at the end of the IPA. These recommendations helped make sure the program was appropriately resourced moving into the next program phase and will stay focused during program execution.

4. INTERNAL TEAM ORGANIZATION

There were a number of valuable lessons learned on internal team organization that contributed to GPS III IPA success. Of course, these lessons can be tailored for other programs.

IPA Lead Responsibilities

As IPA Lead, the Program Office leadership selected a strong, technically-astute IPA Lead to act as the IPA program manager from the program's Systems Engineering & Integration (SE&I) contractor, which worked out extremely well. Other programs may prefer to draw from their Systems Engineering & Technical Assistance (SETA) contractor, or from The Aerospace Corporation. It is important first that this person has skills that can orchestrate the IPA work content, preparation, and action item tracking to make the IPA visit successful. In addition to orchestrating the IPA content this person also needs to have strong interpersonal skills and can communicate with everyone from the program engineers for their important contributions to the retired General Officers that typically chair the IPAT. With the right experience he or she can also bring the entire set of technical and programmatic issues to a sharp focus for the Program and the IPAT through the IPS and careful coordination of the presentations to the IPAT. The third major responsibility is to ensure that all products are successfully completed to the satisfaction of the IPA and Senior Air Force leadership.

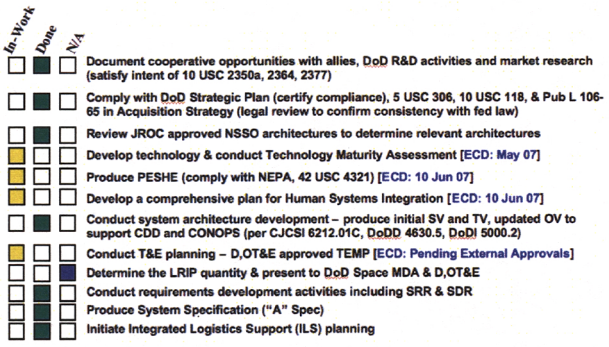
Government Point of Contact Responsibilities

Working directly with the IPA Lead, the program should select a strong Government point of contact. For GPS III, the Program Office selected the GPS III Operations Director, a strong, sharp leader with exceptional dedication and communication skills, who had previous experience as an Executive Officer for a General Officer. He was perfect for the job, and played a critical role ensuring there was a

complete story on program business and funding operations, which proved to be information key to IPA success. Running the IPA interface is not a small task. This is a high visibility job to the Wing Commander and the Program Manager. This job also requires having an awareness of all Program Office activities and how they may relate to the IPA process or KDP-B products at any time during the process. This integration between the IPA Lead focusing on a cohesive IPA package and the Government point of contact infusing the IPA progress into daily Program Office activities resulted in a collaborative environment that was able to implement IPA recommendations real time. Having both a strong IPA Lead and a strong Air Force focal point worked well and provided much better dynamic range to deal with the host of challenges the IPAT threw at the Program Office.

IPA/DSAB Working Group Liaison Responsibilities

An IPA/DSAB Working Group Liaison can be an invaluable focal point for working the Washington, D.C. interface. They meet weekly with the IPA/DSAB Working Group advisory staff to discuss status of documents and action items. This is a very important function that can easily be overlooked. While the Program Element Monitor can sometimes provide hands-on support, his or her primary job is to ensure the program office successfully executes its normal day-to-day business, so IPA/DSAB preparations can be shortchanged. On GPS III, this individual provided at least weekly feedback and situational awareness to the Wing leadership, the GPS III Business Operations Director, and the IPA Program Manager. They were also able to spend time at the Pentagon to help keep documents moving through the signature process by answering questions and ensuring timely deliveries. A best practice for the GPS III IPA was for the Working Group Liaison to use status slides to communicate the status of each document out for signature. Examples of these slides are shown in Figure 4.



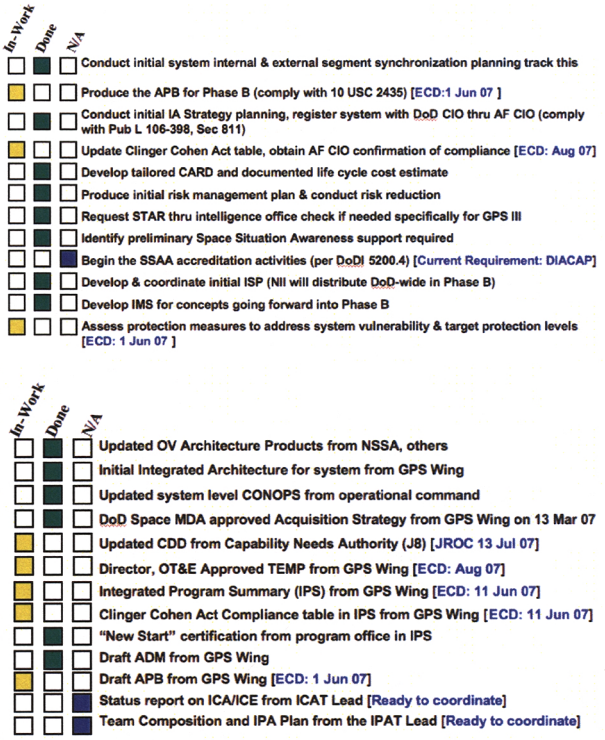


Figure 4: Working Group Liaison Status Slides

Growing Future Leaders

The IPA can be an excellent opportunity for growing future leaders. By providing proper manning and leadership to aggressively address the IPA provides growth opportunities important for the long term health of Air Force acquisition. As one of the IPAT members noted, there needs to be more focus on growing "baby PMs" and teaching future PMs and Program Directors how to manage and execute. After all, this is really a farm team for the future and an early opportunity to start executing. Having the chance to deal face-to-face with the IPA is a unique and exciting learning experience.

5. INTERNAL REPORTING

Integrated Program Summary

The first key to successful internal reporting is giving status on the Integrated Program Summary (IPS). It provides structure for review areas and deliverables. The IPS has multiple requirements, including a large number of documents that must be delivered to the IPA in final form. Anyone interfacing with the IPA needs to understand this nomenclature and follow it.

Weekly Senior Officer Review

The next key to successful internal reporting is to ensure weekly Senior Officer review and status for situational awareness. This provides accountability for what may be multiple Points of Contact (POCs) for the various IPS products and IPA action items. This frequent communication ensures and facilitates advanced notice of areas requiring Senior-level attention. Senior Officer familiarity of the review areas also facilitates a smooth program introduction when the IPA Team arrives.

Action Item Tracking

The third key to successful internal reporting is clear, consistent Action Item Tracking. What worked best for GPS III was a single POC for the tracking list with weekly accountability and a backup POC as appropriate. Another success factor was having only one POC for each action item assigned to ensure maximum accountability.

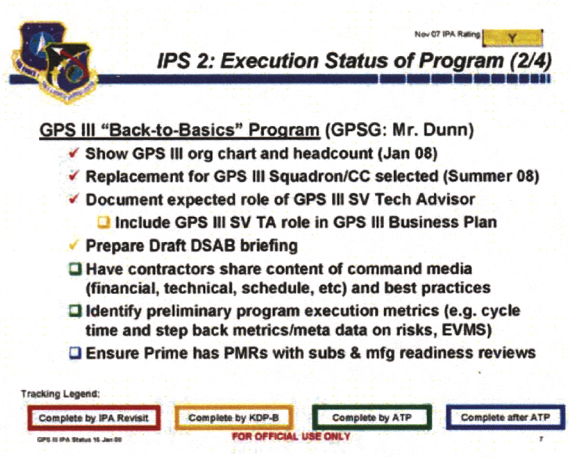


Figure 5: Weekly Action Item Tracking by IPS

A sample of the slides and format used for the Weekly Action Item Tracking meeting is shown in Figure 5 above. In the weekly reporting format used for the GPS III IPA, each IPS area is listed in the title for quick reference along with the color rating from the previous IPA visit. In parentheses the (number of the issue for this IPS area / out of the total number issues for this IPS area) is shown. The sub title of the slide is the sub heading of the IPS and lists the one POC for the IPS sub area actions. Each action item is shown as either open with an open box or closed with a check mark. These characters are easily created by formatting bullets on the slides. The color coding was an effective way to show the time sensitivity and status of the action. The following list shows the colors used in the GPS III IPA Status and what each of the colors represented in the legend.

- **Red**:
  - An action that needed to be completed by the next IPA revisit
- **Yellow**:
  - An action that needed to be completed by KDP-B Approval
- **Green**:
  - An action that would not be completed by the KDP-B decision but regardless needed to be completed before contract Authority to Proceed (ATP)
- **Blue:**
  - A long term action needing to be completed after ATP and before KDP-C

This format was used so successfully on the GPS III IPA that it served multiple purposes. It became the authoritative and single source for action item tracking. It was the weekly format to quickly communicate status and issues to Wing leadership. It also became a communication aide to express the status and long term plans for the Program to the IPAT. Many of the action items would be completed after the IPAT outbrief and KDP-B. Showing the plan of action after the IPAT left and who was responsible for executing the plan demonstrated to the IPAT that their recommendations would not be lost and had in fact become an integral part of future program activities.

6. Internal Preparation

It is essential for the program to start planning early for the IPA! We cannot emphasize this enough. The GPS III team got off to several false starts on products and focal points, which made the IPA experience significantly more painful than necessary. The team needs to focus on product deliverables and crafting the future in each and every IPS area. Preparing early, keeping the end in mind as to what the program should look like as it enters Phase B and implementing recommendations as early as possible are all proactive approaches that not only make the IPA a positive experience but set the program up for early success. The goal is not just to survive the IPA, the ultimate goal is to have a healthy program that emerges ready to deliver capability to the warfighter.

Focused Preparation Campaign

It is not overstating the case to recommend the program needs to start a focused IPA preparation campaign. Months before the IPA arrives, the program needs to have somebody tracking and providing status to the Program Manager on each area in the IPA, with particular emphasis on deliverables and ensuring the IPA Lead is getting the support needed to be successful. Products will all be turned over to the IPAT when it arrives, or in advance of the visit. Long before that happens, the program should make sure somebody has read each document from cover-to-cover. The more the IPS and corresponding documents are

interrelated and tell the complete story of the program, the easier it is for the IPAT to get up to speed and understand the true program needs and where the program is asking for assistance.

IPAT Initial Review Scope

The IPAT Scope begins with NSS 03-01 itself that provides a different checklist for each KDP. The review is principally based upon information provided by the GPS III program, including documentation, briefings and discussions, and documented answers to IPAT questions. Another companion IPA checklist that has been customized for SMC programs is available through the SMC Acquisition Center of Excellence.

IPAT In-Depth Review

The IPAT may also conduct an in-depth review of those areas of particular criticality, controversy, or risk. For GPS III, there was a strong focus on systems and mission issues, including cross-program, systems integration issues. For example, they were concerned the Next Generation Operational Control System (OCX) development and fielding schedule could pose a significant risk area for the success of GPS III unless thoughtful mitigations were put into place. The IPA recognized that a ground command and control system would be essential for successful launch, on-orbit spacecraft deployment, checkout, and performance verification of the first GPS III. After checkout and performance verification of the new GPS III is complete, the IPA was concerned about whether a ground system would be ready to put this new spacecraft into navigation mission operations. Technically the scope of the IPA was only for the GPS IIIA Program, not OCX. However, in response to these IPA concerns, it was important for the program to address these interdependent risks with OCX and develop realistic, actionable mitigation options.

In summary, for internal preparation it's important for the program to prepare documentation and responses for each IPS area. They need to understand the NSS 03-01 criteria for each section and address each one specifically. For the full IPS response, the program and its documentation should have one voice and provide a total program perspective. The program should provide a template for each section author to ensure each criterion is addressed. Ideally each section provides enough information to inform the reader but not so much as to bog down the document. Related documents and information should be referenced and included in the appendix. The IPA Lead, with active support by the Air Force focal point, should be the overall integrator to provide one voice for the document. Senior Wing leadership should clearly understand the overall story that the IPS tells and the issues it highlights to ensure the IPS and the senior level discussions are synchronized.

Product Preparation Challenges

The greatest product challenges for the GPS III team stood out. The biggest challenge was IPS 2: Manpower and Back-to-Basics Training. These products included organization charts and Responsibility, Authority, and Accountability (RAAs), and training documentation. Before moving to the next phase, GPS III program's manpower was one of the most important issues for the IPA because it is critical to success of the program.

The second biggest challenge was IPS 5: Systems Engineering Process Review. In particular the IPA was concerned with status of the Systems Engineering Plan (SEP), including completing OSD reviews and response to critical comments, signature process, and program-specific annexes.

The third biggest challenge was IPS 14: Test and Evaluation Master Plan (TEMP). Of all products the TEMP has the most difficult review and approval requirements. Section 4 is written by a different agency (AFOTEC) and document coordination requires a maze of multiple offices in the Pentagon. This is a big deal and should not be underestimated.

The fourth biggest challenge was IPS 16: Program Control. A well-informed and experienced Wing Program Control shop can be very important to the success of the IPA. They are responsible for the Program Office Estimate that will undergo scrutiny by the IPA and ICE. A strong program Business Operations Director and IPA Program Manager can complement Program Control and ensure task completion. Out motto was "If it's not done, do it!" and we didn't let any organizational barriers get in the way of delivering a necessary product.

7. IPA TEAM INTERACTION

The assessment process is a cooperative effort among the program office, the Independent Cost Assessment (ICA) Team (ICAT), and the IPA Team (IPAT). Constant interaction between the ICAT and IPAT is required once the IPA review begins in order for each team to stay abreast of each other's activities, assumptions, and conclusions. The ICAT must deliver preliminary ICA or ICE results to the IPAT no later than the mid-point of the IPAT's review activities.

Frequent, informal meetings and joint question and answer sessions should be held among the IPAT, ICAT, and program office. It is important to clarify issues, identify contentious areas, fill information gaps, and eliminate potential misunderstandings early in the IPA and ICA process. The IPAT and ICAT teams should provide briefing outlines to program briefers whenever possible to ensure the information provided by the program office is what the IPAT and/or ICAT needs.

The program office's frame of mind is important! If you greet the IPAT in a hostile or defensive way, the visit will take that tone. This visit is not an interruption to your day or just another box to check. The IPA visit is a great opportunity to start with a healthy program and you should get every ounce of information and every offer of assistance from them possible. The IPA genuinely wants to help even if their questions are uncomfortable. The ICAT must deliver preliminary ICA or ICE results to be IPAT no later than the mid-point of the IPAT's review activities.

8. IPA Team Visit

Advanced logistics and small detail planning count. The initial challenge is to make the IPAT feel comfortable. It's a good idea to reach out to the IPA Chair in advance to determine the IPA's needs and set expectations. The Program Office established a large conference room with computers, document access, and printers. It took care of badging and reserved parking in advance. Even little things like name plates and coffee go a long way towards increasing their comfort and everyone's productivity.

The 25-member GPS III IPA Team. assembled for the GPS III IPA contained exceptional talent and offered the Program numerous outsiders' insights on the program, suggestions and support during Program progress and improvements. The IPAT for GPS III included members from the Aerospace Corporation, SMC Acquisition Center of Excellence, MITRE, SMC/EA, NSSO, OSD/NII, DOT&E/IDA, 50th Space Wing, SMC/PID, TRADOC and HQMC.

9. IPA Team Follow-up

After the first visit, smaller IPAT teams will normally follow up. This can be in person, on the phone, or via e-mail. Pay attention because this could be a real opportunity to solve problems or avoid having them.

Even between IPA visits, communication is important and beneficial. The sooner you help close their action items, the more it helps your progress. Responsiveness and timeliness to the responses enable the IPA members to help you close actions successfully.

The IPAT Chair may visit in between, an excellent one-on-one opportunity for Wing Commander, Squadron Commander (Program Manager), and IPAT Chair. If done well, the program can use the current internal status briefing to communicate progress or challenges. This becomes a consistent way to show progress on the IPAT assigned actions in a framework that the Wing Commander is familiar with. This format also clearly shows the progress and forward path for completion as well as any issues – which the IPA Chair may be able to resolve.

10. IPA Action Linkages -- One KDP to Next

Action items left by the IPA become a guide to achieving the overall program milestone. Using the original action item tracking and reporting format can help guide issues to closure before KDP-C. Using the same format ensures a seamless transition and communicates the action plan during program execution during Phase B in a consistent format. GPS III ensured all commitments made during KDP-B were captured new action items related to KDP-C were added in same format to streamline preparation.

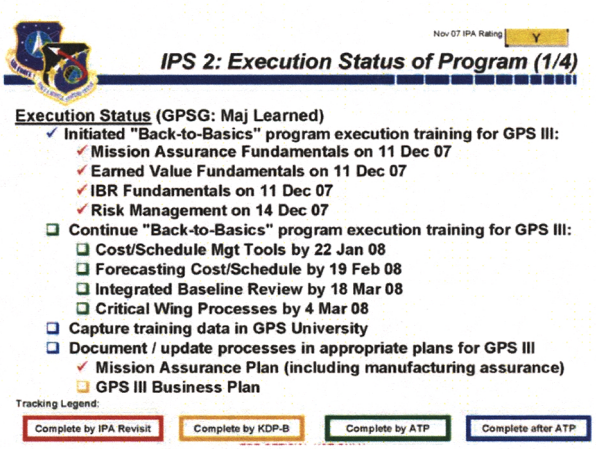


Figure 6: KDP Action Item Tracking used for Program Execution from one Milestone to the Next

Figure 6 shown above is another example slide from the Weekly Action Item Tracking briefing by IPS. This IPS area, Execution Status of the Program is a good example for showing the progress in all stages of the action item completion milestone range. Red checkmarks show the Back-to-Basics training that had been completed by the IPA revisit. The GPS III business plan shown with a yellow box was on target to be completed before the KDP-B approval. The green boxes showed the progression of more advanced training that would be completed by ATP, and just in time for the Integrated Baseline Review (IBR) where many of these skills would be needed by the team. Items in blue reflected longer term actions assigned from the IPAT that would help ensure that the GPS III program progress was captured and institutionalized to benefit the program in the long term execution and benefit the Wing and all of the programs.

Linkages between the Programs KDP-B and KDP-C

The linkages between KDP milestones are important for the same program, in this case for GPS III A from KDB-B to KDP-C because the same issues will be revisited in many cases by the same IPAT team. The team will look for progress against their original actions, how the program execution followed the processed identified in Phases A and B of the program and what will work as the program enters

Phase C. Consistency facilitates communication and makes it easier for the program to not have to re-invent the wheel at each program milestone.

Linkages between other Wing Programs

Linkages between KDP-B's for other programs in the Wing are also strong. Just as the GPS III KDP-B success and issues were heavily intertwined with the ground system program OCX, now the upcoming OCX KDP-B IPA will be heavily dependent on GPS III and the User Equipment program. As GPS III progresses towards KDP-C the same interdependencies between the three programs will be apparent.

Understanding these linkages with all of the programs in the Wing as they face each of their milestone decisions are important. It alerts the IPA Lead as to the issues that the IPAT will be most concerned with. For example, with GPS III the major issue with OCX was the schedule gap and potential availability concern. As the OCX team heads to their KDP-B they have a major tip that the IPAT will be concerned with the same issue and how they are mitigating the schedule risk and working with GPS III to overcome the issue.

Leveraging Existing Products for Consistency

A major advantage to these linkages in addition to the early warning of IPAT issues is the actual IPA Team. Many of the same IPA Team members will be on multiple IPAs in the Wing. This enables them to become experts in the systems they are evaluating, such as GPS and see the total program characteristics and challenges. It also enables the Wing to develop relationships which facilitates easier communication as each IPA visit occurs.

Given this information, using the Action Item Tracking format to not only link progress on the same program but between programs for common issues is a major advantage. Leveraging training for the Wing in a common way conserves resources and benefits the entire Wing, Using common formats for RAA's communicates organization responsibilities consistently from one program to the next. Using a common risk management process, Cost As an Independent Variable (CAIV) process or other processes benefits the entire Wing. It also allows each program to focus on mission success and leverages the Wing infrastructure that the IPA is already familiar with and has contributed to its' maturation and improvements.

Lastly, having a common format to communicate areas such as training and organization that can be adopted and matured by the Wing helps all of the Program Managers and the Wing Commander.

11. CONCLUSIONS

The Independent Program Assessment Team for GPS III shared a wealth of experience and ideas with the program and made a significant impact overall, helping to establish a solid foundation early and move forward with critical processes in place. After an unsuccessful first IPA visit, the program recovered through a myriad of initiatives, actions, and lessons learned which brought the IPA results from failure to the best in recent SMC history. The preparations and hard work contributed strongly to a successful DSAB review that allowed the GPS III program to move forward into the Design Phase and official Program Initiation.

REFERENCE

[1] National Security Space (NSS) Acquisition Policy, Number 03-01, 27 December 2004, "Guidance for DoD Space System Acquisition Process"

BIOGRAPHIES

Jill A-C Hardash *has more than 19 years of experience providing acquisition, IT strategy and economic and business analysis services for space systems and other large programs to the Department of Defense, NASA and the space industry worldwide. Her expertise is in project management, acquisition, cost and economic policy and financial management of large public sector programs. She has extensive experience in space systems acquisition, IT strategy, cost estimating and analysis, and the Planning Programming, Budgeting and Execution System (PPBES) process. Other professional accomplishments include being selected as a Regional Finalist for the White House Fellows Program, earning her Certified Government Financial Manager (CGFM) certification and being hand selected for high visibility studies such as the Air Force Space Systems Development Growth Analysis and the Space Research and Development Industrial Base Assessment conducted by Booz Allen Hamilton. She is the primary author of the 2002 and 2004 NASA Cost Estimating Handbook, contributed to the 2008 NASA CEH, the 2005 Naval Sea Systems Command (NAVSEA) Cost Estimating Handbook and the Australian Department of Defence Cost Estimating Method. She is also the recipient of numerous awards, most notably the Global Positioning System Directors Award and the Booz Allen Hamilton Values In Practice (VIP) award. She earned a BA in Business Management with a minor in Economics from Loyola Marymount University and an MBA from Pepperdine University.*

Mike Dunn *has over 30 years experience in space systems development and operations. He is Technical Director for the Global Positioning Systems (GPS) Wing, Space and Missile Systems Center, Los Angeles AFB, CA. He serves as primary technical advisor to the GPS Wing Commander in developing, acquiring, and integrating critical satellite systems, operational control systems, and user equipment systems that provide sustained and enhanced Position, Navigation, and Timing information to our warfighters and civil users. Until recently, he served as GPS Space Group Director leading satellite development, launch, and on-orbit support. His first job as a civil servant was in Space Radar, where he led satellite and payload concept definition, risk reduction, and demonstration initiatives for a transformational space radar system. In his last military assignment he served as Director of Launch Programs, leading acquisition, engineering, and operational support for Titan II/IV, Atlas IIA/IIAS. and Delta II launch vehicles, plus Centaur and Inertial Upper Stage. He certified the flightworthiness of each vehicle and served as the Air Force Mission Director. His government/industry team set a record 33 mission successes in a row. He is certified Acquisition Level III in Program Management, Systems Development, and Business Management. He has a BS in Chemistry and Life Sciences from the US Air Force Academy and an MS in Systems Management from the University of Southern California.*