

Turning Avoidable Guidelines Into Sensible Requirements – Credible Space Cost Estimating Policy

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Abstract—In the last five years NASA has experienced a renaissance in cost estimating. The small crew of remaining estimators at the Agency started an effort to rebuild the cost estimating capability at all of the Centers, including NASA Headquarters. This involved growing the number of trained cost estimators, educating cost estimating customers and providing guidance on the discipline of cost estimating at NASA. Without these three components credible cost estimates within NASA would not be possible. Five years later, with a robust cadre of trained estimators, how has the cost estimating message been delivered to customers? How have all of the Centers come to agreement on the guidance for their estimates, providing the consistency that leads to the credibility of recent NASA cost estimates? One of the most visible tools that has increased estimating credibility at NASA is the Cost Estimating Handbook (CEH). First published in 2002 and now in revision for the third edition, the NASA CEH has captured inputs from all of the NASA Centers and found consensus on how cost estimates should be conducted at NASA. This paper focuses on the methods and tools that have taken the initial “avoidable guidelines” originally found at NASA and transformed them into sensible cost estimating requirements that the NASA cost estimating community can follow. This paper will discuss how communication between the Centers led to consistency in requirements and cost estimates, resulting in credible cost estimates at NASA.

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INTRODUCTION

In the last five years NASA has experienced a renaissance in cost estimating. The small crew of remaining estimators at the Agency started an effort to rebuild the cost estimating capability at all of the Centers, including NASA Headquarters.

This growth involved three components; growing the number of trained cost estimators, educating cost estimating customers and providing guidance on the discipline of cost estimating at NASA. Without these three components credible cost estimates within NASA would not be possible. Growing the number of trained cost estimators meant hiring estimators of all levels with diverse cost backgrounds on a nationwide scale. Every center increased their cost estimating expertise through hiring, relocation and training. With a trained cadre of cost estimators in place it was clear that the cost estimating customers needed to be educated on cost estimating and how to leverage this expertise. A cost estimating awareness campaign was undertaken at all levels of NASA from the Business Financial Managers, Engineers and Project Managers.

Once the participants were in place it was clear that the accomplishment of agreed upon cost estimating guidelines needed to have some clearly communicated formal cost estimating requirements. During this time there were also changes in leadership at NASA, including two different Administrators. In addition to these changes a new vision was set forth the Nation and our goals for space exploration. In February 2004 President Bush endorsed The Vision for Space Exploration [1] as seen in **Figure 1**. This Vision challenged NASA to explore the Moon, Mars and beyond without a significant increase to their already modest budget. Cost was not only a concern that hadn’t been seen at NASA for years, now it was the focus of attention for all future programs.

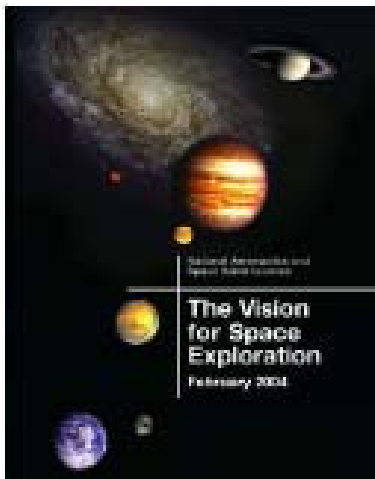


Figure 1: The Vision for Space Exploration Document Cover

Five years later, with a robust cadre of trained estimators, how have the cost estimating challenges been met? How has the message been delivered to customers? How have all of the Centers come to agreement on the guidance for their estimates, providing the consistency that leads to the credibility of recent NASA cost estimates? One of the most visible tools that has increased estimating credibility at NASA is the Cost Estimating Handbook (CEH). First published in 2002 and now in revision for the third edition, the NASA CEH has captured inputs from all of the NASA Centers, found consensus on how cost estimates should be conducted at NASA and has created policy to ensure cost estimating consistency for the Agency.

The journey to increase credibility of space cost estimating at NASA was paralleled by the creation of the 2002 NASA Cost Estimating Handbook (CEH) [2] and many fledgling initiatives championed by the NASA Independent Program Assessment Office (IPAO). The update to the 2002 edition provided more strict requirements, reflecting the adoption of many of the early initiatives and the formation of the new Cost Analysis Division (CAD) at NASA Headquarters. This resulted in the updated 2004 NASA Cost Estimating Handbook [3] which solidified NASA cost initiatives and turned them into Agency required policy.

This paper focuses on the methods and tools that have taken the “avoidable guidelines” initially found and rarely heeded at NASA and transformed them into sensible cost estimating requirements that the NASA cost estimating community can follow. This paper will discuss how communication between the Centers led to consistency in requirements and cost estimates, resulting in credible cost estimates at NASA.

AVOIDABLE GUIDELINES

In the process of rebuilding the cost capability at NASA, leadership at each center and at the NASA Headquarters level had some critical questions that needed to be answered. Some of these questions included:

- Is estimating for a space system different than estimating for aircraft? Estimating manned missions different than unmanned missions?
- Is every NASA Center and their cost estimating needs different?
- How can we best communicate the cost estimating process to new NASA cost estimators and senior NASA cost estimators alike?
- Can we speak the same language to provide guidance from trained estimators to aerospace engineers?
- Are we working towards affordable future systems and avoiding cost growth?
- How do we provide guidance that all NASA Centers will follow rather than avoid?

Space vs. Air – While documenting the existing processes and best practices at each of the NASA Centers each of these questions were addressed. This data collection was conducted through in person interviews at each of the NASA Centers and at NASA Cost Analysis Steering Group (CASG) meetings. In reference to space vs. air, the decision was made that there are differences between spacecraft and aircraft estimating, however the basics of the core cost estimating process were no different. The initial CEH focused purely on presenting a common vision for the core cost estimating process. Where it was appropriate, tips for estimating manned and unmanned missions as well as aircraft were provided.

Is every Center different – Each NASA Center has a unique focus, which brings unique estimating challenges. Through interviews it was determined that there were still striking commonalities at the beginning and end of an estimate. Every Center started an estimate using the same basic cost estimating techniques and had to present the results for use in the same NASA budget. The challenge was to standardize the cost estimating process used in between the beginning of the estimate and the presentation of the results. By standardizing this process the Centers still had flexibility within their unique product needs, but the actual estimate being conducted gained credibility by ensuring it followed the same tested cost estimating process that accounted for estimating methodologies, risk, and documentation. From this critical question “Is every NASA Center’s cost estimating needs different?” the core of the NASA CEH was

created. As shown in **Figure 2** the twelve step NASA cost estimating process was developed using direct input from all NASA Center cost groups. By involving all Centers in this process there was very little resistance or “avoidance” of this new cost estimating process guideline. Unlike past efforts, this guideline was created by the cost community, for use by the cost community. This resulted in a constructive requirement that an estimator could incorporate into their daily work.



Figure 2: NASA Cost Estimating Process

The communication challenge – The communication of this process and other NASA cost initiatives was another challenge. How would these be communicated to the NASA estimators – some with years of experience at other agencies but new to NASA and others new to the profession – and still communicated to the experienced NASA estimators in a useful manner? Through interviews with the full spectrum of NASA cost estimators, it was determined that the tone of the NASA CEH was to provide the basics of NASA cost estimating in the form of useful guidelines that would be followed by all estimators. The tone was a balance: high level and quick reference information that an experienced estimator could refer to when creating an estimate and summarized step by step guidance for the new estimator. This step by step guidance was detailed enough to show the NASA approach but not in depth enough to become a text book reference. Instead references and links to other sources were given to direct the new estimator to other resources without reinventing the wheel for NASA.

Estimators to engineers – The challenge of speaking to everyone from trained cost estimators to engineers and everyone from resource managers to project managers in

between was addressed through prioritization. During the data collection effort for the 2002 CEH, interviews were mainly conducted with members of the NASA Cost Estimating Community (CEC); however some engineers that often addressed cost and some Project Managers were also interviewed to determine their needs as cost estimating customers. The primary audience of the CEH was the cost estimator. The secondary audience was the others at NASA who interface with cost estimating and need to understand the process. These others included Resource Managers who manage project budgets and engineers who were often asked to provide “engineering estimates.” The other focus of the secondary audience was the cost estimating customer – mainly the Project Managers who needed to interpret and defend cost estimates and the leadership at NASA Headquarters who were often the recipients of these presentations. The CEH did not speak to the secondary audience directly, however it was written in a direct manner so if this audience consulted the CEH as a reference it would provide the needed overview. The CEH was also designed so an estimator could copy and paste graphics or sections of text into customer presentations to help them understand an estimating process employed and to help increase consistency in the cost estimating message presented to decision makers.

Affordable future systems – The question of working towards affordable projects and avoiding cost growth could not be answered solely through the creation of new guidelines. The CEH focused on increasing the credibility of NASA cost estimates which provided two end results. The first was increased confidence and realism in NASA cost estimates which provided decision makers with more of a cost challenge but at the same time with an answer that would see less cost growth in the long run. The second was increasing the credibility of NASA cost estimating meant that the NASA CEC was doing their part towards delivering affordable future systems for the Agency.

The unspoken question – During this documentation process an even more critical and unspoken question arose. How do you ask estimators that have spent years avoiding guidelines from Headquarters to now rally around and support new guidelines for the NASA cost community? For years cost estimating at NASA was underappreciated and as a result estimators had to work around the ever changing directives such as the fallout from “faster, better, cheaper” and pressure to deliver cost estimates that met the available budget. During this era, delivering a credible cost estimate was not always welcome and even if it was, the estimate was often conducted with an understaffed and under resourced team. If the cost did not support the budget the cost estimator was often sent back and told to try again. This undermined the credibility of the cost estimates and created an environment for the cost estimators where they felt the need to work around the system, avoid any new requirements and cautiously present their work.

Creating unified cost estimating guidance for NASA not only required answering some of the most basic questions – it required a complete culture shift. Estimators needed resources, support from the highest levels and a chance to create guidelines that made sense and didn't need to be avoided to accomplish a credible estimate. This was a larger challenge than expected.

2002 NASA CEH Approach

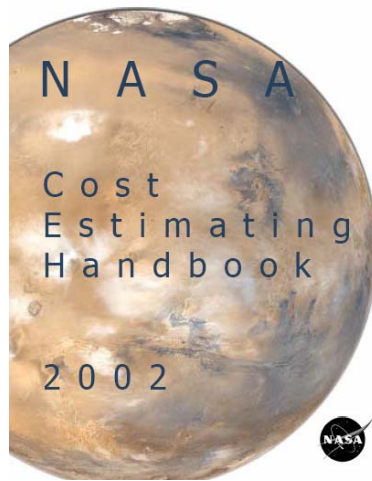


Figure 3: 2002 NASA Cost Estimating Handbook Cover

The goal of the 2002 NASA CEH [2], as show in **Figure 3**, was to create a resource providing structure for cost estimates and consistency in the processes for all of the NASA centers cost estimating groups. By creating this structure and consistency, it yielded guidelines all could agree upon.

The approach taken in creating the 2002 NASA CEH [2] was to gather data in the form of:

- Documenting existing procedures
- Collecting industry best practices
- Interviewing the existing cost estimating community at NASA

Documenting existing procedures – The 2002 interview team visited every cost group at each Center. During the interviews a standard set of interview questions were used to gather information on how the NASA CEC conducted their cost estimating, what methodologies and tools they employed and what challenges they faced. Where there were existing procedures or guidelines for any of these areas the team collected this information. By incorporating existing guidelines that the NASA CEC had created themselves this made the document a much more useful reference for the CEC.

Industry best practices – In the absence of existing guidelines or procedures the team did two things. First, the interviews determined why a procedure did not exist – lack of experience? Lack of support? No real need? Once the reason for the lack of a procedure was understood, industry best practices were researched. Through tailoring these best practices to the NASA environment and then socializing them with the NASA CEC the areas that had not been addressed now had a workable guideline.

The interviews – The interviews have been mentioned repeatedly in this paper. This is because of the major role they played in creating the 2002 NASA CEH [2]. Without these interviews the team would not have been able to take an impartial look at the NASA CEC to determine the strengths and the areas of need and to understand how to best serve this rebuilding community. By taking the time to understand the needs, listen to the concerns and socialize new ideas a solid document was created. Armed with this information and the support of the NASA CEC guidelines could be created that could be useful rather than useless. The team made it clear from the beginning that this document was created by gathering the wisdom of the cost community at NASA to be used by the cost community at NASA.

The theme that drove the original 2002 NASA CEH [2] was the three C's: **Communication, Consistency and Credibility**. Through the interview process and gaining a deeper understanding of the challenges that the NASA CEH community faced it became clear how the NASA CEH could contribute to the culture change within the NASA cost community. By encouraging the three C's and providing a framework for successful estimates, estimators would have written guidance to give them the strength needed when presenting their work. In greater detail the three C's are:

Communication – Through communicating with other NASA estimators, knowledge is passed between centers and estimates are improved. Through communicating with NASA leadership, engineers and business manager's different project perspectives are gained, information is passed and estimates are positively received.

Consistency – Following common guidelines, estimating processes and briefing templates creates consistent cost estimates. Consistent cost estimates between projects and between NASA Centers improves the credibility of NASA cost estimates.

Credibility – Following the guidelines agreed upon by all participants rather than working to avoid them strengthens the position of the NASA cost community. Consistent estimates that have been well communicated lead to credible cost estimates. In turn, credible cost estimates lead to increased cost credibility for the Agency.

The 2002 NASA CEH [2] was a collaborative document developed through hours of interviews, discussion, and

correspondence with the NASA CEC. Interviews with the NASA CEC and IPAO staff were held to research and document cost estimating best practices embraced by NASA, to garner a feel for the environments where NASA cost estimators perform their estimates, and to see, first hand, how the CEH can enhance the cost estimating capability. Limited interviews were also conducted with cost estimating customers such as Project Managers, Resource Managers and project engineers.

The CEH strikes a balance between documenting processes and providing basic resources for cost estimators from the beginner to the experienced, without setting a tone of strict guidance. It is supplemented by Center specific examples where appropriate. The NASA CEH brings the fundamental concepts and techniques of cost estimating to NASA CEC personnel in a way that recognizes the nature of NASA systems and the NASA environment.

An example of the fundamental concepts introduced in the 2002 NASA CEH [2] is shown in **Figure 4**. Experienced cost estimators understood that there are many resources required when preparing for an estimate, in addition to the basic steps of selecting a methodology and conducting the estimate. Cost Estimate Preparation requires that the estimator understand Schedule, Data, Resource and Customer Expectations before even selecting a methodology for the estimate. The concept of Cost Estimate Preparation is basic, yet provides a good reminder to the experienced estimator, a framework for a new estimator to NASA, a checklist for an inexperienced estimator and a vehicle communicate these needs to a cost estimating customer. By providing these basic concepts in a common sense manner for all audiences, the end result was a set of useful

guidelines for the NASA CEC to employ.

The handbook is a top-level overview of cost estimating as a discipline, not an in-depth examination of each and every aspect of cost estimating. It is also a useful reference document, providing many pointers to other sources for details to complement and to enhance the information provided on these pages. In addition to the back to basics approach, the CEH was created to facilitate increased credibility and communications within and beyond the NASA CEC by promoting the knowledge and skills necessary to formulate consistent and accurate estimates.

Accurate and defensible estimates are at the core of the future credibility of the NASA CEC. Regardless of whom the estimate is being prepared for, who the decision-maker is or to whom the estimate is being presented, the estimator must always remember that the ultimate customer is the cost-estimating discipline. Truth and accuracy combined with a defensible and well-documented estimate will always earn the respect of a decision-maker. Cost estimation is part science, part art. There are many well-defined processes within the cost estimating discipline. There is also a subjective element to cost estimating that makes the discipline an art. An attempt is made to capture the art form as well as the science in this CEH. The current perception that cost estimating is a “black box” can be demystified by accurate, defensible, well-documented estimates that are consistently presented and can be easily understood. The 2002 NASA CEH [2] was a starting point in correcting this perception and increasing NASA cost credibility.

The 2002 NASA CEH [2] was the “first ink” to be refined over time and through use. The first edition was a living

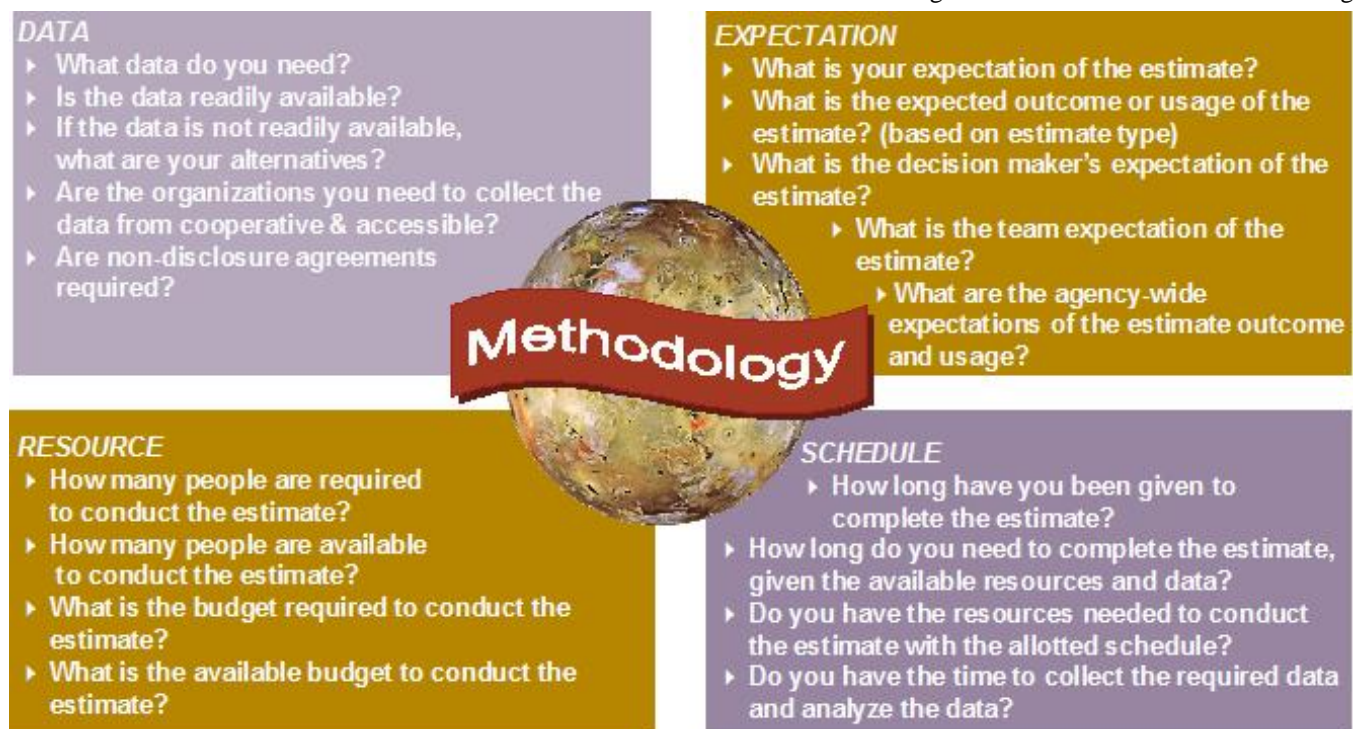


Figure 4: Cost Estimate Preparation

document developed to be a useful tool for the NASA Cost Estimator. The mark of success was feedback from the cost community, dialogue, and a dog-eared copy of the NASA CEH on the desk of all NASA cost estimators. And a success it was.

2004 NASA CEH Approach



Figure 5: 2004 NASA Cost Estimating Handbook Cover

The 2002 NASA CEH was a success because it was a collaborative effort that involved the expertise and needs of the NASA cost community. Building on this approach, the 2004 NASA CEH [3] as shown in **Figure 5**, sought to continue this inclusive approach creating a useable document and to expand the reach by turning guidelines into requirements in line with NASA Procedural Requirements (NPRs) such as NPR 7120.5C shown in **Figure 6**.

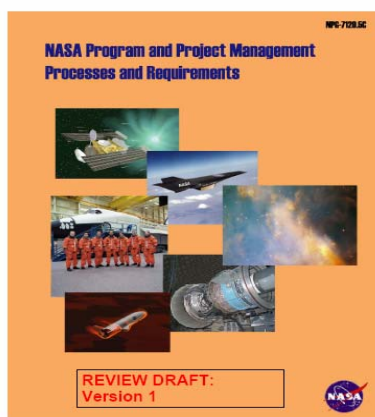


Figure 6: NASA Program and Project Management Process Requirements 7120.5C Cover

The approach for the 2004 NASA CEH [3] was to build upon the basics of the 2002 NASA CEH [2] by:

- Continuing the collaborative effort between cost estimators at all Centers
- Expanding the audience and the input base of the CEH to include NASA contractors, industry experts and NASA Project Managers
- Leveraging the increased cost credibility in the NASA community providing flexibility to change policy and do what is right
- Turning guidelines into requirements in line with NASA Agency requirements

Continuing collaboration – Collaboration is what made the 2002 edition a tremendous success. The team recognized the importance of continuing this spirit of collaboration in data gathering and idea exchange for the 2004 edition. While interviews were still conducted at many NASA Centers, not all were able to participate in the 2004 interviews. Through the quarterly NASA CASG meetings we were still able to obtain data and representation from all of the NASA Centers.

Expanding the audience – Expanding the audience to include Project Managers and contractors was now possible due to the solid foundation and success of the 2002 edition. To ensure we were including useful information for this section of the audience, we included a large sampling of NASA Project Managers to find out their perspective of cost estimating, how they use cost estimates and what their greatest cost challenges were. The interview team also sought input from NASA contractors so data could be included that helped estimators understand how contractors estimate NASA programs and to help contractors understand how NASA programs use submitted contractor cost estimates.

Changing policy – Besides unifying the NASA CEC, the most important outcome of the NASA CEH was the increase in NASA cost credibility. With this increased credibility and newly unified cost community it allowed for cost policy to be created at the Agency that was not only useful but it was championed by the cost estimators. This was a tremendous and positive culture shift from just a few years earlier. The ability to document cost estimating guidelines for all NASA employees to follow and have them communicated to the Agency in the form of NPR 7120.5 was a major accomplishment.

Turning guidelines into requirements – With the support of the NASA CEC the useless guidelines that used to be avoided had been transformed into guidelines written by cost estimators, for cost estimators in the 2002 edition. By the 2004 edition, these guidelines had become useful requirements that were required by the Agency. These requirements gave the cost estimators consistent guidelines to follow and when asked to do otherwise it gave them the

backing of the Agency to do what was right when it came to presenting cost estimates. These guidelines had become a license to practice the discipline of cost estimating and useful requirements for doing what is right for the Agency. An example of what good policy can do for the government when implemented correctly.

The NASA CEH has proven to be a dynamic, living document, changing with the many positive developments within the cost estimating community at NASA. In the 2002 edition of the NASA CEH, the mark of success was feedback, dialogue, and finding dog-eared copies of the CEH on the desks at NASA. The writing team heard the overwhelmingly positive and constructive feedback, engaged each Center in enthusiastic dialogue, and not only found dog eared copies on the desks of cost estimators, but on the desks of the NASA Deputy Administrator, NASA Project Managers, engineers, resource analysts, industry, educational institutions and organizations from four continents. The wisdom, best practices, lessons learned, processes and One NASA cost collaboration estimating knowledge not only made the NASA cost estimating community a more credible and productive place to be, but contributed to the increased credibility of the cost estimating community at large, at home and abroad.

The 2004 NASA CEH addressed new NASA Headquarters organizations, new initiatives such as Cost Analysis Data Requirements (CADRe), including data and model sharing, Data Requirements (DRs) and the One NASA Cost Estimating (ONCE) database to gather data proactively for future estimates, and the integration of cost risk in the concept of the NASA Project. These are just a few of the impressive changes that the One NASA cost estimating community undertook to meet the current challenges.

The goals for the 2002 NASA CEH [2] were to improve communication, to build consistency, and to enhance credibility. The NASA CEC met these goals through the CEH and other tools and initiatives. By working together and communicating, they shared information and commiserated lessons learned within NASA and beyond. By opening this door to collaboration, they took best practices in NASA and the cost estimating community at large to help increase cost estimating consistency within cost groups, projects, Centers, and to Headquarters, OMB, and Congress. By using the information, presenting it in a consistent manner, and being willing and open to these new ideas and challenges, the cost community put NASA on the path to recognized, credible cost estimates. In the process they also caught the attention of the cost estimating community beyond NASA with new initiatives and creative solutions to long time problems such as data sharing, streamlined technical baselines, and cost risk.

The 2004 NASA CEH was a collaborative document developed through hours of interviews, discussion, and correspondence with the NASA cost estimating community.

As shown in **Figure 7**, the 2004 NASA CEH [3] theme was to Gain, to Understand and to Find.

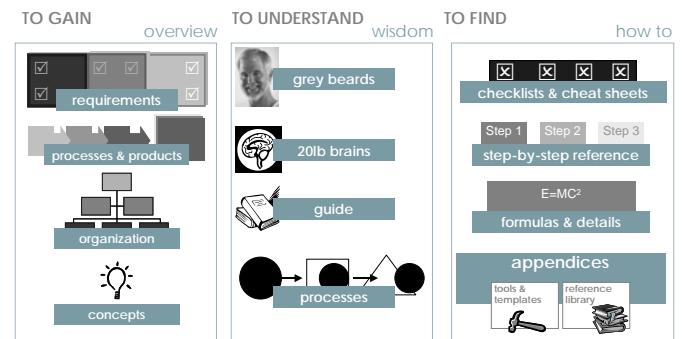


Figure 7: 2004 NASA CEH Theme

The reorganized document had also been updated to include and clarify new cost initiatives for the Agency.

To Gain – The overview of the document provided an area for an estimator to gain an understanding of the recent changes including the new requirements, processes, organizations and concepts.

To Understand – The new portion of the document was introduced as the “wisdom” helping an estimator to understand reasons behind new policy requirements, providing helpful tips from seasoned estimators, the inclusion of guides and checklists and processes to help an estimator through the new requirements.

To Find – The last portion of the document was the more traditional portion from the 2002 edition. It allowed the estimator to quickly find the “how to” on the cost estimating process, checklists, formulas for specific methodologies and appendices providing even further in depth information. This newly reorganized document was a way to communicate policy to a broader audience while still maintaining a useful reference for the NASA cost estimator.

Interviews with the NASA cost estimating community including Headquarters Program Analysis and Evaluation (PA&E) staff, IPAO staff, and Center Cost Offices were held to research and document cost estimating best practices embraced by NASA, to garner a feel for the environments where NASA cost estimators perform their estimates, and to see, first hand, how the CEH can enhance the cost estimating capability.

In the 2004 CEH edition, Project Managers and resource analysts were also interviewed to determine how the cost community interacts with these critical players and where improvements could be made. The CEH struck a balance between documenting processes and providing basic resources for cost estimators from the beginner to the experienced, while providing the detail and “how to” function of NASA Program and Project Management Processes and Requirement (NPR) 7120.5C [3]. The NASA

CEH brings the fundamental concepts and techniques of cost estimating to NASA cost estimating community personnel in a way that recognizes the nature of NASA systems and the NASA environment. The handbook is a top-level overview of cost estimating as a discipline, not an in-depth examination of each and every aspect of cost estimating. It is called the *Cost Estimating Handbook* so it is not confused as a resource that covers the entire discipline of cost *analysis*. It is a useful reference document, providing many pointers to other sources for details to complement and to enhance the information provided on the pages.

SENSIBLE REQUIREMENTS

Accurate and defensible estimates are at the core of the future credibility of the NASA CEC. Regardless of whom the estimate is being prepared for, who the decision-maker is, or to whom the estimate is being presented, the estimator must always remember that the ultimate customer is the cost-estimating discipline. Truth and accuracy combined with a defensible and well-documented estimate will always earn the respect of a decision-maker.

Strengthening guidelines and expressing them in the form of requirements that are not to be avoided but are followed by cost estimators and others at NASA results in structure and support from the highest levels. This support ensures that credible cost estimates are recognized, appreciated and used at the Agency level. This is a fundamental shift from the 2002 CEH to the 2004 CEH. It is also a critical step for the advancement of the NASA cost community and the Agency as a whole.

Communicating these requirements in an easily accessible and economical manner is also critical. The 2004 NASA CEH [3] was available in a limited run of printed copies. More readily accessible was the electronic Portable Document Format (.pdf) version which included bookmarks and an easily portable and searchable format for the desktop. A web based version was also available for the 2004 edition as demonstrated in the screen shot in **Figure 8**. Both the .pdf and web enabled format of the CEH are available to the NASA CEH and the public at www.ceh.nasa.gov. By using the web to widely distribute this cost estimating policy and it's links to the NPR 7120.5 the information was communicated to the entire Agency and the larger cost community in a cost effective manner. Feedback mechanisms in the form of email were also provided to ensure comments and feedback were collected for this living document.

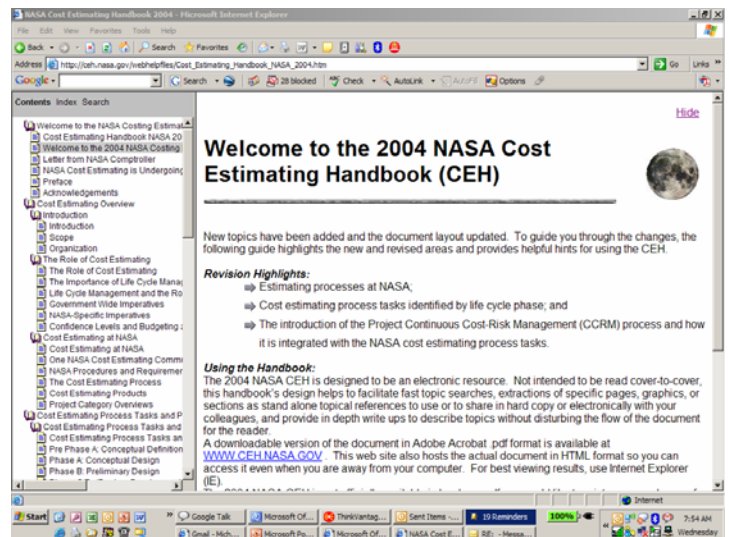


Figure 8: Web Enabled Version of the 2004 NASA CEH

As the estimator needs to spend less energy “avoiding” useless guidelines more energy can be focused on producing credible cost estimates. This is made possible because the new requirements were developed by the cost estimators and therefore were agreed upon as logical and helpful before they became requirements that all must meet. This results in success for the cost community and the Agency by having useful requirements, supporting the cost community and yielding credible cost estimates for the Agency.

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BIOGRAPHY

Jill A-C Hardash has more than 15 years of experience



providing 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, cost and economic policy and financial management of large public sector programs. She has extensive experience in cost estimating and analysis,

Cost Analysis Requirements Description (CARD) development, CADRe requirements development, acquisition management, business and financial management, Scheduling and Earned Value Management (EVM) support 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, 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 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.