National Aeronautics and Space Administration

Information Resources Self-Review Process Guide

Developed by the NASA Self-Assessment Redesign Team

March 1996

Table of Contents

Section

Appendix

PREFACE

Self-review is a management tool devised to answer external requirements for assessment imposed by Congress and the Office of Management and Budget. These requirements are found in public law and Federal directives. Principal external requirements for review of information resources and information technology security include the Information Technology Management Reform Act of 1996, the Paperwork Reduction Act of 1995, the Government Performance and Results Act of 1993, the Computer Security Act of 1987, and the Federal Managers' Financial Integrity Act of 1982.

Information resources, which include information and information technology are critical to the successful accomplishment of NASA's missions. This *Information Resources Self-Review Process Guide* is a tool for implementing self-assessment as the primary review process for assuring compliance with law and continual improvement of information resources management, and evaluating progress in achieving objectives set forth in the *NASA Information Resources Strategic Plan*. The *Guide* itself is a product of teamwork and continual improvement.

In 1995, an intercenter reengineering team redesigned NASA's information resources management functional area self-assessment. The team not only redesigned previous methods used for self-assessment but also integrated two formerly separate evaluation processes for information resources management and information technology security into one streamlined annual review. The new methodology de-emphasizes compliance and promotes a progressive implementation of evolving "best practices." A risk-based management philosophy underscores commitment to the idea that there will always be opportunities for improvement.

Ronald S. West
Chief Information Officer

NASA Team Leader: Marie K. Tynan

Team Members:

Ames Research Center: John Humbert and John R. Ray
George C. Marshall Space Flight Center: Kathleen K. Mann
Goddard Space Flight Center: Dennis E. Reed
Headquarters: Bessie B. Berry, Richard W. Carr, and Linda K. Perez
Langley Research Center: Lisa Y. Yu
Lyndon B. Johnson Space Center: Wanda S. Hobley

1. PURPOSE

The self-review process is designed to stimulate thought and the sharing of ideas that will yield assessments focused on measuring the contribution of Information Resource Management (IRM) to NASA's mission performance. It is a means for assessing how well technologies, procedures, organizations, and initiatives meet internally developed best practices, with particular emphasis on those outlined as objectives in the *NASA Information Resources Strategic Plan*, which supports the *NASA Strategic Plan.* The Center self-review reports were redesigned for the purpose of providing useful improvement information to each Center as well as contributing more effectively to the *Annual Integrated Program Assessment (AIPA)* for IRM. The *AIPA* will be used by senior management to report achievement of performance goals and identify needed improvement actions and Agency best practices.

2. SCOPE

The self-review process provides the framework for improving controls and coordinating NASA's review activities. The process identifies five Information Resources (IR) elements for review

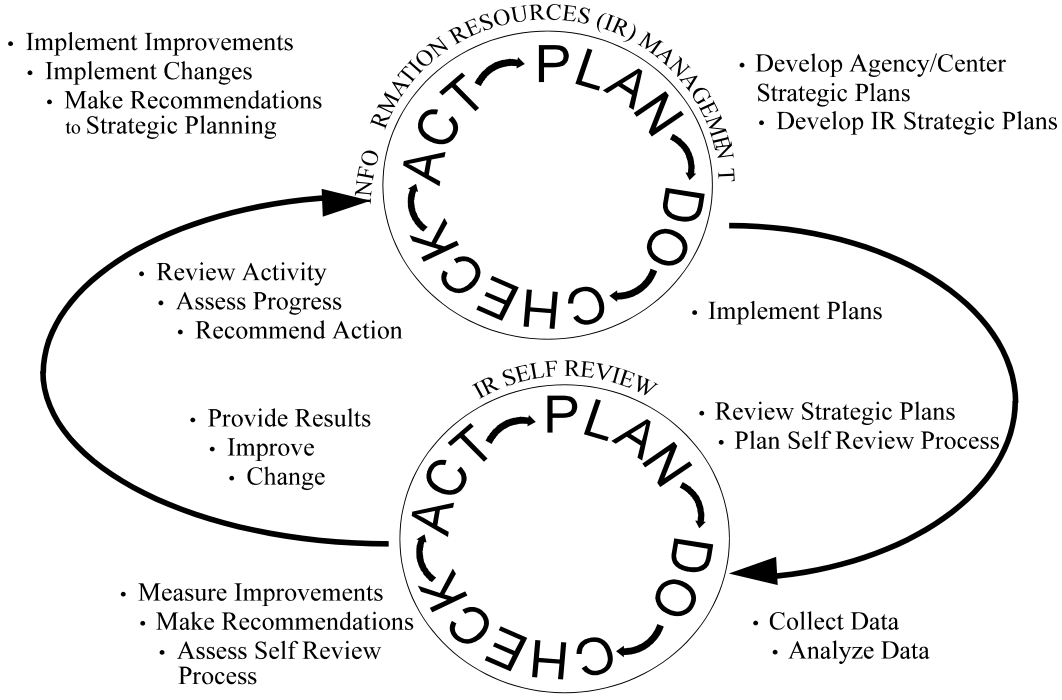
I. IR Oversight
II. Information Technology (IT) Security Oversight
III. Information Management
IV. IT Management
V. Major Information Systems (MIS) Management

These five areas represent a major streamlining of seventeen different IRM activities previously identified for self-assessment as well as the integration of the IT security review into this re-engineered process. IT security is treated as a separate area for self-review because of its critical function in the protection of NASA's large investment in IT. Each IR element is reviewed annually.

Primary customers for the self-review are the Center Chief Information Officers (CIOs) and the Center Directors, and the Enterprise CIOs. Secondary customers include the Agency CIO and the Director, IRM Division, who prepares the *AIPA* for signature by the Agency CIO and submission to the Administrator. The self-review process is used to provide continual input to the strategic planning process and for the improvement of the annual integrated program assessment process.

3. PROCESS MODEL DESCRIPTION

The integration of the IR self-review with NASA's IR planning activities led to the development of an overall process model that defines key elements of the review process and links them to IR strategic planning. The annual cycle model is derived from the NASA continual improvement approach as advocated by NASA Management Instruction (NMI) 1240.3, Functional Management. It is composed of two spheres, each representing IR activities as conducted according to a Plan-Do-Check-Act (PDCA) model.



NASA Information Resources PDCA Process

Cycle 1 - IR Management

The first PDCA sphere represents the cycle of IR activities carried out in the day-to-day IR environment. This sphere is reflected as a closed loop model.

Plan: The cycle begins with strategic plans that are developed for the Agency and each Center. The Strategic Plans contain goals and objectives that can be tracked to corresponding actions. In addition, the formulation and use of measures are encouraged at all levels to provide progress data and input for reports on how the Centers and Agency are achieving their goals.

Do: Actions are implemented to achieve the strategic plan goals and objectives.

Check: Throughout the year, program, project, and management reviews are conducted. Customers provide feedback and employees suggest improvements. Outside sources such as the Government Accounting Office (GAO) and the Office of the Inspector General (OIG) perform reviews. Each Center's IR self-review activities and the *AIPA* activities are part of this cycle.

Act: As a result of the various reviews, steps are taken to make improvements and changes. Also the knowledge gained from these reviews is incorporated into the Agency and Center strategic plans. It is this closing of the loop that makes the process model dynamic and capable of fostering continual improvement in the management of IR.

Cycle 2 - IR Self-Review

In addition to continual improvement brought about by day-to-day reviews, NASA has added a formalized self-review approach, represented by the lower PDCA cycle. This approach accomplishes the following functions:

- Provides a tool for measuring the Agency's degree of success in meeting the objectives set forth in the *NASA IR Strategic Plan*.
- Institutes the annual Center IR self-review
- Integrates customer feedback into the IR self-review

The lower PDCA cycle shows that the self-review process is itself a closed loop model. The arrows at both sides of this model indicate that Cycle 1 feeds into Cycle 2 and that the findings of the self-review feed back into the Cycle 1 activities. This information flow can occur at any step of the PDCA model.

Plan: The planning for the performance of the annual self-review includes input from strategic plans and other Cycle 1 activities, as well as information learned through previous reviews.

Do: The collecting and analyzing of data in performing the IR self-review.

Check: Evaluating the self-review process to assure that it continually improves.

Act: Recommending improvements and changes to the self-review process and providing results to the IR management process.

4. SELF-REVIEW PRODUCTS

This new IR self-review process calls for the production by each Center of five *Center Detailed Reports*, a *Center Summary Report*, and an *IR Self-Review Improvement Survey*. Each of these products is a metric, as well as a means to effecting continual improvement. The conduct of the self-review, identification of accomplishments and areas for improvement, and assessment of risk result in information that is compiled into a detailed report used by the Center and the Center's CIO to initiate improvement activities.

The Center self-review team will complete a *Center Detailed Report* for each of the five IR elements. The *Detailed Reports* are summarized by the Center CIO for submission as the *Center Summary Report* to NASA Headquarters. The *Summary Report* from each of the Centers provides the input to the development of the *AIPA*. The *Center Summary Reports* and the *AIPA* serve as progress reports for use by the Agency CIO in measuring NASA's success in meeting its IR strategic planning objectives. The reports may further support the Agency CIO's decision making process by focusing attention on areas of critical concern, thus assuring that necessary resources are in place and needed changes are implemented.

The Center self-review team for each IR element will also complete the *IR Self-Review Improvement Survey*. The Center CIO will develop the Center *IR Self-Review Improvement Survey* based on the team surveys from the five IR element self-reviews. The survey tool will provide feedback for continual improvement of the self-review process.

Formats for the *Detailed* and *Summary Reports* are included in Appendix G. An example of a *Summary Report* submission to NASA Headquarters is included in Appendix H. The *IR Self-Review Improvement Survey* format is in Appendix F.

5. SELF-REVIEW INSTRUCTIONS

The following instructions are provided as a guide to Centers for conducting the self-review and completing the required report documents.

Carefully consider and discuss the IR element reviews with this question in mind: How can I use the best practices presented in this self-review process to improve management at our Center?

Identify major accomplishments. These performance indicators show success and will generally include significant cost savings, cost avoidance, workforce savings, or direct contribution to mission accomplishments. Significant achievements may also include improved business and mission planning, more efficient operations, higher quality of information and processes, more effective decision-making, and better management reporting. Major accomplishments should emphasize improvements resulting from following strategic plan goals and objectives.

IR Element Review Process

Step 1 (Center CIO) Organize the Self-Review

A team approach is recommended to complete each of the IR element self-reviews. The teams should include the IR functional manager (and sub-function managers as required), staff personnel, and customers of the function. Participation on the teams from other NASA Centers is encouraged to obtain as broad a perspective as possible.

Note that the self-review includes an assessment of each of the Center's major information systems identified in the Center's latest submission to the Agency CIO's annual IR strategic planning call. Teams formed to review MISs should also include the MIS data owner as a team member.

Step 2 (Review Team) Review Best Practices

Best practices for each IR element are located in Appendices A through E. Consider for each IR element how the Center is employing the best practices and to what degree, according to the "level of maturity scale." Performance of each best practice is rated as shown in Appendix G, *Center Detailed Report.* Centers are encouraged to identify additional best practices that have been successful in achieving continual improvements in service to customers, improved efficiency and cost-effectiveness, improved standardization, etc.

Step 3 (Review Team) Identify Accomplishments

Identify the Center's significant accomplishments during the past year in IR Oversight, IT Security Oversight, Information Management, IT Management, and MIS Management. Cost savings, cost avoidance, operational efficiencies, labor savings, cycle time decreases, mission performance, and standardization improvements are to be identified and considered in assessing the significance of the accomplishment. Major accomplishments are to be flagged for inclusion in the *Center Summary Report*. Please use an asterisk (*) to identify the items that are considered major for the *Summary Report.*

Step 4 (Review Team) Identify Areas for Improvement

Identify areas for improvement which each team recommends that the Center undertake in the coming year. Only major areas will be included in the *Center Summary Report.* Please use an asterisk (*) to identify the items that are considered major for the *Summary Report.*

Step 5 (Review Team) Assign Risk Rating

Assign a risk level for each IR element on the line for "Risk Assignment" using the rating scale of High, Medium, or Low as shown in Appendix G, *Center Detailed Report.*

Step 6 (Review Team) Complete Improvement Survey

Complete the *IR Self-Review Improvement Survey,* Appendix F. Centers are requested to complete this survey to provide feedback and input for future improvements to the IR self-review process.

Step 7 (Review Team) Assess Performance Measures

Identify performance measures or metrics that have been successful at measuring continual improvements in service to customers, improved efficiency and cost-effectiveness, improved standardization, etc. Refer to *Center Detailed Report.*

Step 8 (Center CIO) Generate the Center Products

Provide an overall maturity rating for each IR element based upon the results of the individual best practice evaluation for each of the IR elements. Provide an overall risk rating for the Center's IR activities derived from the rating in each area. Center CIOs should use the self-review maturity scale to rate the Center's responsiveness to Agency CIO focus areas during the year. This gauge provides the Agency CIO with a snapshot of how the Center CIOs perceive they are implementing change, CIO focus areas, and priority initiatives.

The *Summary Report* format shown in Appendix G, serves as an executive summary for documenting the Center's progress in adoption of best practices, the overall risk rating for the Center, and the Center's performance measures.

In addition, the Center's Major Accomplishments and Areas for Improvement are to be summarized from the detailed findings. This information may be included on the *Summary Report* as shown in Appendix H.

Step 9 (Center CIO) Assessing the Assessment Process

Complete the *IR Self-Review Improvement Survey* included in Appendix F from the Center CIO's perspective and include it with your *Summary Report.*

Detailed Report Content

The Center Detailed Self-Review Report is an aggregation of the detailed findings/results, obtained through the preceding steps, and will be retained and used by the Center.

Center Summary Report Content

The *Center Summary Report* is intended to be a high-level summary. The self-review results should be formatted as defined in Appendix G. The summary report will also include narrative on significant accomplishments and major areas for improvement, and the *Center IR Self-Review Improvement Survey.* An example of the *Center Summary Report, Results Synopsis of Major*

Accomplishments and Areas for Improvement, Survey, and the associated transmittal memo are shown in Appendix H.

6. *ANNUAL INTEGRATED PROGRAM ASSESSMENT (AIPA)*

Center results provide input to development of the *AIPA* by the IRM Division. The *AIPA* is the result of all the Centers' self-reviews and other audit and performance measurement activities, which are compiled and analyzed to provide the Agency CIO with an overall assessment of areas excellence, areas of risk and identification of best practices. The *AIPA* also provides input to the Administrator's *Agency Accountability Report* provided annually to the President and the Congress as a formal assurance that the Agency's controls are achieving their intended objectives.

7. SHARING SELF-REVIEW RESULTS

An important part of the self-review process is the post-review teleconference. This teleconference includes the Agency CIO, the IRM Division, Enterprise CIOs, Center CIOs, and Center review team members. The role of the IRM Division is to coordinate and facilitate this forum for sharing best practices, areas needing improvement, and performance measures.

Information Resources Self-Review Process

Appendix

APPENDIX A

IR OVERSIGHT

Definition: Oversight of Information Resources (IR) is the management of information and related technology resources to assure support to missions and operational effectiveness.

Objective: NASA's IR oversight objective is to assure that IR strategic and CIO focus area goals are achieved. These goals are achieved through the establishment of architectures and uniform standards, defining appropriate measures, and performing investment planning, all of which contribute to an effective IR life-cycle methodology. The Agency must ensure that a positive return on its investment in information technology is achieved. The focus should be on the elimination of unnecessary and duplicate information, and the combining or sharing of services, tools, processes, and other resources. Special emphasis must be placed on consolidation, sharing, and reuse of information resources.

Best Practices:

1. Ensure that IR investments are adequately considered as part of the Center’s strategic planning.
2. Perform IR investment planning by balancing risks and benefits.
3. Integrate the IR investment strategy into the Center’s budgeting process.
4. Participate in the development of Agency IT architectures and standards.
5. Develop and review IT architectures and standards for the Center and align with Agency interoperability goals.
6. Measure progress toward achieving consolidation, modernization, interoperability, standardization, increased use of Commercial Off-the-Shelf (COTS) products, high customer satisfaction, training goals, and a high return-on-investment.
7. Use performance measures for continual improvement of IR products, processes, and services.
8. Upgrade the skills and knowledge of the workforce through timely training on information resources, technologies, and related disciplines.
9. Establish an effective IR management structure for supporting the Agency CIO’s vision and strategic focus areas, as well as the Center’s IR objectives.
10. Ensure that existing assets are leveraged effectively.

APPENDIX B

IT SECURITY OVERSIGHT

Definition: Information technology (IT) security oversight is the protection of the integrity, confidentiality, and availability of information and related IT resources. IT security is an integral part of the effective management of information resources. It is represented in every IR element in the assessment process and is presented here as a separate oversight entity, to emphasize its importance and to facilitate separate reporting requirements.

Objective: NASA's IT security oversight objective is to ensure that information, computing, and communications services are secure through managing risks; developing security infrastructure, architecture and standards; integrating customer issues and concerns; providing customer training and awareness; and influencing the policy, planning, budgeting, and performance measurement processes.

Best Practices:

1. Ensure that security at NASA protects our resources through implementation of policies, procedures, standards, and performance measures.
2. Ensure that a management official authorizes in writing the use of each major application and general support system based on systems testing, technical evaluation and certification.
3. Ensure that controls for security are performed as an integral part of daily operations.
4. Ensure that responsibility for security in each system is assigned to an individual knowledgeable in the IT used in the system and in providing security for both IT and the information.
5. Establish a systematic process to ensure that personnel receive training and are knowledgeable of, and are managing identified IT security risks.
6. Ensure that IT architecture, standards, and implementation plans address IT security goals, objectives, and strategies.
7. Integrate security into the life cycle management of IT planning and evaluation, budgeting, acquisition, development, operation, and disposal or reutilization processes.
8. Ensure that a systematic process is in place to identify and handle IT security incidents, which includes effective cost analysis, interface with supervisory NASA management officials, and interface with the NASA OIG on all cases that involve criminal activity.

APPENDIX C

INFORMATION MANAGEMENT

Definition: Information management is the management and control of NASA's investment in information, including the identification of information needs and the assurance of sharing and consolidation, standardization, control, security, and integrity of data created, stored, manipulated, disseminated and archived/retired. Information management includes the disciplines of data administration and management of scientific and technical information, libraries, records, forms, mail, directives, printing, and correspondence.

Objective: NASA's information management objective is to ensure data integrity, accessibility, and availability, and to protect the Agency's investment in information. Information management seeks to ensure that data created, stored, manipulated, disseminated, and reported effectively meets customer needs through sharing information requirements, eliminating redundancies, ensuring standardization, providing training and awareness, and measuring customer satisfaction.

Best Practices:

1. Ensure that data management policies and procedures further the Enterprise goals and objectives.
2. Manage data/information as a strategic resource in its own right.
3. Consider information management functions in IR planning and budgeting.
4. Ensure that the needs of all customers, including those with disabilities, are met through information management products and services.
5. Apply IT to improve the performance of information management functions.
6. Facilitate the accessibility of NASA scientific and technical information to our customers.
7. Apply information security techniques to protect the integrity, confidentiality, availability of information, and guard against unauthorized disclosure.
8. Identify opportunities to reduce data redundancies and standardize implementations at the Center and the Agency.
9. Provide users and managers with awareness and training on information life cycle management (creation, access, dissemination, storage, and disposition).
10. Continually improve information management by measuring performance and customer satisfaction.

APPENDIX D

INFORMATION TECHNOLOGY (IT) MANAGEMENT

Definition: IT management is the management and control of NASA's investment in IT which includes components as defined by the "Information Technology Management Reform Act of 1996," Section 5002, as follows:

(A) The term "information technology", with respect to an executive agency means any equipment or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, control, display, switching, interchange, transmission, or reception of data or information by the executive agency. For purposes of the preceding sentence, equipment is used by an executive agency if the equipment is used by the executive agency directly or is used by a contractor under contract with the executive agency which (I) requires the use of such equipment, or (ii) requires the use, to a significant extent, of such equipment in the performance of a service or the furnishing of a product.

(B) The term "information technology" includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services), and related resources.

(C) Notwithstanding subparagraphs (A) and (B), the term "information technology" does not include any equipment that is acquired by a Federal contractor incidental to a Federal contract.

Objective: NASA's IT management objective is to apply uniform architecture and standards that will ensure interoperability with a continual focus on modernization and life cycle planning to meet customer needs.

Best Practices:

1. Ensure that IT management policies and procedures support NASA's Enterprises.

2. Ensure that IT is addressed in the *Center Strategic Plan.*

3. Assess the applicability of industry trends to Center's IT architecture and standards.

4. Plan for an increased use of COTS products and outsourcing of IT services.

5. Assess IT needs based on requirements, utilization of existing resources, consolidation opportunities, and modernization objectives.

6. Ensure that the IT needs of all customers, including those with disabilities, are met.

7. Assure optimum return-on-investment from IT acquisition planning through standardization, consolidation, and sharing of resources.

8. Ensure adequate training in use of IT.

9. Measure the effectiveness of such key IT processes as obsolescence metrics to improve interoperability.

APPENDIX E

MAJOR INFORMATION SYSTEM (MIS) MANAGEMENT

Definition: MIS management is oversight of a system that requires special continuing management attention because of its importance to an Agency mission, its high development, operating or maintenance costs, or its significant impact on the administration of agency programs, finances, property, or other resources. An MIS inventory is identified by each Center as part of the *Annual Request for Information Resources Strategic Implementation Plans.*

Objective: MISs should be managed as investments that are essential to successfully and efficiently achieving NASA's mission. Management should be accomplished through a focus on comprehensive life cycle planning, sound risk management, continuing improvement in operational efficiencies, and the use of measures to evaluate performance and customer satisfaction.

Best Practices:

1. Ensure the MIS program plan spans the full life cycle of the system, addressing modernization, architectures, standards, and consolidation.
2. Ensure the MIS information technology security plan addresses risk management and contingency planning.
3. Consider asset management strategies for determining if the system is continuing to meet customer needs and if technology replacement is required.
4. Capitalize on opportunities for outsourcing or use of COTS solutions.
5. Ensure active customer participation in managing the MIS, especially the configuration management process.
6. Measure system performance, improve service to customers, and reduce operating costs.

APPENDIX F

IR Self-Review Improvement Survey

The self-assessment redesign team wishes to ensure that the self-review process is useful, efficient, kept up-to-date, and responsive to the expressed needs of the NASA community. Please answer the following questions by using the scale provided, comparing *last* year's *self-review* with *this* year's *self-review*. We would like to use your feedback to make improvements to next year's *IR self-review*.

Scale

1—Strongly Disagree 2—Disagree 3—Agree 4—Strongly Agree

	SD	D	A	SA
1. The IR self-review was efficient; it made good use of our time.				
Last Year	1	2	3	4
This Year	1	2	3	4
2. The *IR self-review* was effective; it enabled us to do a thorough review.				
Last Year	1	2	3	4
This Year	1	2	3	4
3. The results were useful; they provided us with information needed for improvements.				
Last Year	1	2	3	4
This Year	1	2	3	4
4. The *IR self-review* was responsive to the needs of IR customers.				
Last Year	1	2	3	4
This Year	1	2	3	4

5. What improvements to this process guide would you like us to make next year?

6. What did you like or dislike about the reporting approach used this year?

7. Recommend additional best practices to be incorporated into this review guide.

APPENDIX G
Format for Self-Review Reports

"Center Name" Summary Report
Information Resources Self-Review

Degrees of Performance of Best Practices

IR Elements	Not supported or unstructured	Being Defined	Being Implemented	Mature or Institutionalized
IR Oversight				
IT Security Oversight				
Information Management				
IT Management				
MIS Management				

Levels of Maturity Scale:

Non-supported or unstructured means that the Center has not defined processes or procedures for implementing the management practices.

Being defined means that processes or procedures are being developed that call for the expected practices, but they have not yet been put in place.

Being implemented means that appropriate IR processes and procedures have been designed and are being followed in parts of the Center, but they may not be consistently followed.

Mature or institutionalized means that the Center has fully adopted the IR practices called for, applies them consistently, and improves them through a feedback loop.

Degrees of Implementation for CIO Strategic Focus Areas

Focus Areas	Not supported or unstructured	Being Defined	Being Implemented	Mature or Institutionalized
1. Supercomputing consolidation				
2. Mainframe consolidation				
3. IT obsolescence management				
4. Agency IR Strategic Plan				
5. IT standards & Interoperability				

Major Accomplishments: In narrative text paragraph, specify business function or enterprise supported and quantify the results.
Major Improvements: In narrative text paragraph, describe areas for improvement and if possible, state the desired results.

Detailed "*Center Name"* Report
IR Oversight Review Response

Degrees of Performance of Best Practices

IR Oversight	Not supported or unstructured	Being Defined	Being Implemented	Mature or Institutionalized
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Levels of Maturity Scale:

Non-supported or unstructured means that the Center has not defined processes or procedures for implementing the management practices.

Being defined means that processes or procedures are being developed that call for the expected practices, but they have not yet been put in place.

Being implemented means that appropriate IR processes and procedures have been designed and are being followed in parts of the Center, but they may not be consistently followed.

Mature or institutionalized means that the Center has fully adopted the IR practices called for, applies them consistently, and improves them through a feedback loop.

Significant Accomplishments: narrative text

Areas for Improvement: narrative text

Risk Assignment: select one of the following for an overall rating of this area

Risk Definition:

Low Controls are sufficient to minimize risk, regardless of how much risk is inherent in a process.

Med. There are several areas of significant risk in spite of existing controls, but the remaining risk is unlikely to result in (1) loss of life, (2) significant loss or waste of resources, or (3) endangerment or reduction of the Agency's ability to perform its mission.

High There are several areas of significant risk in spite of existing controls, and the remaining risk has the potential to result in (1) loss of life, (2) significant loss or waste of resources, or (3) endangerment or reduction of the Agency's ability to perform its mission.

Successful Measures: provide a brief narrative description of the criteria used to measure the Center's success in managing the IR elements.

Detailed "*Center Name"* Report
IT Security Oversight Review Response

Degrees of Performance of Best Practices

IT Security Oversight	Not supported or unstructured	Being Defined	Being Implemented	Mature or Institutionalized
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

Levels of Maturity Scale:

Non-supported or unstructured means that the Center has not defined processes or procedures for implementing the management practices.

Being defined means that processes or procedures are being developed that call for the expected practices, but they have not yet been put in place.

Being implemented means that appropriate IR processes and procedures have been designed and are being followed in parts of the Center, but they may not be consistently followed.

Mature or institutionalized means that the Center has fully adopted the IR practices called for, applies them consistently, and improves them through a feedback loop.

Significant Accomplishments: narrative text

Areas for Improvement: narrative text

Risk Assignment: select one of the following for an overall rating of this area

Risk Definition:

Low Controls are sufficient to minimize risk, regardless of how much risk is inherent in a process.

Med. There are several areas of significant risk in spite of existing controls, but the remaining risk is unlikely to result in (1) loss of life, (2) significant loss or waste of resources, or (3) endangerment or reduction of the Agency's ability to perform its mission.

High There are several areas of significant risk in spite of existing controls, and the remaining risk has the potential to result in (1) loss of life, (2) significant loss or waste of resources, or (3) endangerment or reduction of the Agency's ability to perform its mission.

Successful Measures: provide a brief narrative description of the criteria used to measure the Center's success in managing the IR elements.

Detailed "*Center Name"* Report
Information Management Review Response

Degrees of Performance of Best Practices

Information Management	Not supported or unstructured	Being Defined	Being Implemented	Mature or Institutionalized
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Levels of Maturity Scale:

Non-supported or unstructured means that the Center has not defined processes or procedures for implementing the management practices.

Being defined means that processes or procedures are being developed that call for the expected practices, but they have not yet been put in place.

Being implemented means that appropriate IR processes and procedures have been designed and are being followed in parts of the Center, but they may not be consistently followed.

Mature or institutionalized means that the Center has fully adopted the IR practices called for, applies them consistently, and improves them through a feedback loop.

Significant Accomplishments: narrative text

Areas for Improvement: narrative text

Risk Assignment: select one of the following for an overall rating of this area

Risk Definition:

Low Controls are sufficient to minimize risk, regardless of how much risk is inherent in a process.

Med. There are several areas of significant risk in spite of existing controls, but the remaining risk is unlikely to result in (1) loss of life, (2) significant loss or waste of resources, or (3) endangerment or reduction of the Agency's ability to perform its mission.

High There are several areas of significant risk in spite of existing controls, and the remaining risk has the potential to result in (1) loss of life, (2) significant loss or waste of resources, or (3) endangerment or reduction of the Agency's ability to perform its mission.

Successful Measures: provide a brief narrative description of the criteria used to measure the Center's success in managing the IR elements.

Detailed "*Center Name"* Report
IT Management Review Response

Degrees of Performance of Best Practices

IT Management	Not supported or unstructured	Being Defined	Being Implemented	Mature or Institutionalized
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				

Levels of Maturity Scale:

Non-supported or unstructured means that the Center has not defined processes or procedures for implementing the management practices.

Being defined means that processes or procedures are being developed that call for the expected practices, but they have not yet been put in place.

Being implemented means that appropriate IR processes and procedures have been designed and are being followed in parts of the Center, but they may not be consistently followed.

Mature or institutionalized means that the Center has fully adopted the IR practices called for, applies them consistently, and improves them through a feedback loop.

Significant Accomplishments: narrative text

Areas for Improvement: narrative text

Risk Assignment: select one of the following for an overall rating of this area

Risk Definition:

Low Controls are sufficient to minimize risk, regardless of how much risk is inherent in a process.

Med. There are several areas of significant risk in spite of existing controls, but the remaining risk is unlikely to result in (1) loss of life, (2) significant loss or waste of resources, or (3) endangerment or reduction of the Agency's ability to perform its mission.

High There are several areas of significant risk in spite of existing controls, and the remaining risk has the potential to result in (1) loss of life, (2) significant loss or waste of resources, or (3) endangerment or reduction of the Agency's ability to perform its mission.

Successful Measures: provide a brief narrative description of the criteria used to measure the Center's success in managing the IR elements.

Detailed "*Center Name"* Report
MIS Management Review Response

Degrees of Performance of Best Practices

MIS Management	Not supported or unstructured	Being Defined	Being Implemented	Mature or Institutionalized
1.				
2.				
3.				
4.				
5.				
6.				
7.				

Levels of Maturity Scale:

Non-supported or unstructured means that the Center has not defined processes or procedures for implementing the management practices.

Being defined means that processes or procedures are being developed that call for the expected practices, but they have not yet been put in place.

Being implemented means that appropriate IR processes and procedures have been designed and are being followed in parts of the Center, but they may not be consistently followed.

Mature or institutionalized means that the Center has fully adopted the IR practices called for, applies them consistently, and improves them through a feedback loop.

Significant Accomplishments: narrative text

Areas for Improvement: narrative text

Risk Assignment: select one of the following for an overall rating of this area

Risk Definition:

Low Controls are sufficient to minimize risk, regardless of how much risk is inherent in a process.

Med. There are several areas of significant risk in spite of existing controls, but the remaining risk is unlikely to result in (1) loss of life, (2) significant loss or waste of resources, or (3) endangerment or reduction of the Agency's ability to perform its mission.

High There are several areas of significant risk in spite of existing controls, and the remaining risk has the potential to result in (1) loss of life, (2) significant loss or waste of resources, or (3) endangerment or reduction of the Agency's ability to perform its mission.

Successful Measures: provide a brief narrative description of the criteria used to measure the Center's success in managing the IR elements.

APPENDIX H

Summary Report Example

May, 1996

To: NASA Headquarters
AO/Chief Information Officer
All applicable Enterprise CIOs

Thru: Center Director

From: Chief Information Officer

Subject: Information Resources (IR) Self-review for FY96

The Center has conducted the FY96 Information Resources self-review. Summary results are enclosed, including the Summary Report matrix and narrative descriptions of significant accomplishments and significant areas for improvement. Also, included is the Center's response to the IR self-review improvement survey.

Significant Accomplishments:

- Automation of on-line access to management instructions.
- Reengineering of the Shuttle Mission Control Center (MCC), through the application of advanced IT systems and architectures.

Areas for Improvements:

- Develop a process to ensure prompt deletions of computer access when grants are terminated.

Based on the "degree of performance" of best practices and areas for improvement identified in this self-review, the risk that the Center will not meet its IR strategic goals is _____ (High, Med., or Low).

Signed

Center CIO

Enclosures:

1) Summary Report
2) IR Self-Review Results
3) IR Self-Review Improvement Survey

Enclosure #1

"*Center Name"* Summary Report
Information Resources Self-Review

Degrees of Performance of Best Practices

IR Elements	Not supported or unstructured	Being Defined	Being Implemented	Mature or Institutionalized
IR Oversight			X	
IT Security Oversight				X
Information Management		X		
IT Management		X		
MIS Management			X	

Levels of Maturity Scale:

Non-supported or unstructured means that the Center has not defined processes or procedures for implementing the management practices.

Being defined means that processes or procedures are being developed that call for the expected practices, but they have not yet been put in place.

Being implemented means that appropriate IR processes and procedures have been designed and are being followed in parts of the Center, but they may not be consistently followed.

Mature or institutionalized means that the Center has fully adopted the IR practices called for, applies them consistently, and improves them through a feedback loop.

Degrees of Implementation for CIO Strategic Focus Areas

Focus Areas	Not supported or unstructured	Being Defined	Being Implemented	Mature or Institutionalized
1.Supercomputing Consolidation				X
2. Mainframe Consolidation				X
3. IT obsolescence management		X		
4. Agency IR Strategic Plan			X	
5. IT standards & interoperability		X		

Major Accomplishments: In narrative text paragraph, specify business function or enterprise supported and quantify the results.
Major Improvements: In narrative text paragraph, describe areas for improvement and if possible, state the desired results.

Enclosure #2

IR Self-Review Results

Major Accomplishments: In a narrative text paragraph, specify business function or enterprise supported and quantify the results.

- Information Management

Center automation of on-line access to management instructions resulted in increased accessibility, currency, and cost savings. Direct savings—maintaining management instructions on-line reduced printing, editing, and binding cost by $500,000 per year. Indirect savings—labor hours were reduced by eliminating hours to maintain instruction changes and deletions; distribution costs were reduced; and all instructions are current and available on demand.

- Mission Control Center (MCC) Reengineering

Reengineering of the Shuttle Mission Control Center (MCC), through the application of advanced IT systems and architectures, has resulted in significant improvements in responsiveness to mission requirements while reducing cost by approximately $75 million over the next five years. This modernization is based upon the use of high performance COTS engineering workstations inter-connected in a distributed computing network, replacing the custom engineered hardware and mainframe-based systems. This COTS approach has significantly reduced hardware and software cost and the on-going support/maintenance labor requirements. The incorporation of industry standards in this modular design also greatly facilitates the infusion of new technologies to maintain the long-term cost effectiveness of the system. The simplified architecture further facilitates modifications needed to meet flight-specific experiments, reducing lead time from approximately one year to a few days.

Major Improvements: In narrative text paragraph, describe areas for improvement and, if possible, state the desired results.

- IT Security

Efficient elimination of expired ID's. Develop a process to ensure prompt deletions of computer access when grants are terminated. Reduce security risks by eliminating inactive accounts.

Enclosure #2

IR Self-Review Improvement Survey

The self-assessment redesign team wishes to ensure that the self-review process is useful, efficient, kept up-to-date, and responsive to the expressed needs of the NASA community. Please answer the following questions by using the scale provided, comparing *last* year's *self-review* with *this* year's *self-review*. We would like to use your feedback to make improvements to next year's *IR self-review*.

Scale

1—Strongly Disagree 2—Disagree 3—Agree 4—Strongly Agree

	SD	D	A	SA
1. The IR self-review was efficient; it made good use of our time.				
Last Year	1	2	3	4
This Year	1	2	3	4
2. The *IR self-review* was effective; it enabled us to do a thorough review.				
Last Year	1	2	3	4
This Year	1	2	3	4
3. The results were useful; they provided us with information needed for improvements.				
Last Year	1	2	3	4
This Year	1	2	3	4
4. The *IR self-review* was responsive to the needs of IR customers.				
Last Year	1	2	3	4
This Year	1	2	3	4

5. What improvements to this process guide would you like us to make next year?

6. What did you like or dislike about the reporting approach used this year?

7. Recommend additional best practices to be incorporated into this review guide.