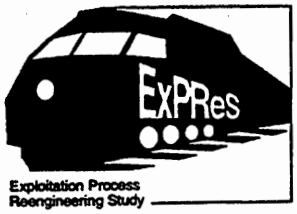
Exploitation Process Reengineering Study (ExPReS)



20 July 1995

#791

ACKNOWLEDGMENT

The following acknowledges those involved in the development of this document.

Mr. Greg Arnold, Defense Mapping Agency
Mr. Eric Benn, Defense Intelligence Agency
Mr. Robert Cardillo, Central Imagery Office
Mr. Richard Crow, Defense Intelligence Agency
Mr. Doug Gates, Central Imagery Office
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Mr. Gary Lance, Central Intelligence Agency/National Photographic Interpretation Center
Mr. Steve Moore, Defense Intelligence Agency
Mr. Pat Murray, U.S. Navy
Mr. Charles Schoenwetter, Central Intelligence Agency/National Photographic Interpretation Center
Mr. Wes Sullivan, U.S. Air Force
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EXECUTIVE SUMMARY

INTRODUCTION

Purpose of the Exploitation Process Reengineering Study (ExPReS)

The purpose of ExPReS was to improve the exploitation process through analysis, simplification, elimination of non-value-added activities, and the employment of technology, where appropriate.

ExPReS Goals and Scope

The goals of the ExPReS effort were to optimize the imagery exploitation process, harmonize imagery exploitation with the other United States Imagery System (USIS) processes (e.g., collection, dissemination), and ensure that customers receive quality imagery and imagery-derived products and information in a timely manner. The scope of ExPReS was limited to reengineering the imagery exploitation process, encompassing the management, extraction, transformation, or derivation of imagery-based information and the generation of products, information, and services to satisfy internal and external customer needs.

KEY FINDINGS, KEY RECOMMENDATIONS, AND BENEFITS

Key Findings

The core value-added activity of exploitation (imagery analysis) is sound; however, the lack of a supporting environment limits its effectiveness. Specifically:

- Analysts/cartographers lack sufficient access to community-wide information and customers
- Coordination shortfalls exist among organizations at the community level
- Diverse exploitation environments inhibit coordination, collaboration, and integration
- Technology infrastructure is inconsistent and not postured to meet future customer needs
- Exploitation relies heavily upon hardcopy technologies and manual processes.

Key Recommendations

The ExPReS Team proposes the following recommendations in response to the key findings:

Implement a Base of Knowledge (BOK)

The BOK is a virtual database that spans all exploitation elements and reaches beyond exploitation. The BOK links a vast array of sources and information. Some characteristics of the BOK include, but are not limited to: timely access to all sources of information, with automated, user-friendly navigation tools; metadata on all information; filtering capabilities which provide only the information required; and layering of information. The BOK includes intelligence

(classified or open source) and Mapping, Charting, and Geodesy (MC&G) products, information, and data; exploitation task information including linkages to collection and all source tasking; standards, formats, and templates; source materials; registry of organizational personnel expertise; and supporting help, tools/applications, and training materials.

Establish a Coordinated Community Environment

The main items in a coordinated community environment are: integration and effective use of community resources; an interoperable environment with standards for products, systems, and data; development and maintenance of a registry of organizational and personnel skills; deconfliction of requirements by aligning expertise/mission with customer needs ("lanes in the road"); consolidation of product types; integration of technology efforts; and a harmonized exploitation voice within the USIS.

Enable Seamless Execution of Tasks

Establish a standard, digital environment with modular workstations, access to the BOK, required tools, and a single point of entry with multi-level security. Provide a collaborative environment that connects required expertise and customers (e.g., electronic "meeting rooms"). Develop a proactive task management structure that effectively uses resources, pre-stages materials, and provides assistance when needed. Record results in standardized layers for information reuse, and the generation and tailoring of products.

Build an Advanced Technology Infrastructure

Design and implement a standards-driven integrated exploitation infrastructure (connectivity, interoperability, and collaboration) to enable the implementation of the BOK and facilitate the insertion of technology. Establish a program to coordinate technology insertion from development through operations and maintenance.

These four recommendations are interdependent and together improve the exploitation process. The advanced technology infrastructure provides the foundation for the exploitation process and BOK recommendations. The BOK provides the information required for the coordinated community environment and the seamless execution of tasks. The community environment provides the structure, guidance, and standards that will ensure the process and infrastructure work efficiently and effectively. The process itself takes advantage of advanced technology, the BOK, and the coordinated community environment to achieve many of the improvements.

Benefits

Implementation of the key recommendations will result in benefits to both customers and exploitation elements.

- Customers and analysts/cartographers will have timely access to information, facilitating higher quality products
- New exploitation will use and build upon existing data
- Products, systems, and data standards will facilitate an interoperable environment
- Collaborative capability will leverage expertise, information, and tools across the community
- Resources will be efficiently used through the effective alignment of community expertise/missions with customer needs
- Visibility of community-wide tasking will allow for rapid deconfliction and collaboration
- Automation within the exploitation process will reduce the time between identification of need and answer
- Large amounts of data will be tailored to support customer information needs
- Coordinated training programs will promote a professional workforce throughout the exploitation environment
- Coordinated technology development will reduce cost and increase effectiveness across the community.

In conclusion, ExPReS has made a significant contribution to USIS by documenting the challenges of the future, analyzing the exploitation process, and identifying specific actions required to reengineer the process. In order to fully realize the benefits of these recommendations, detailed implementation strategies must be developed to incorporate the needed technologies and to move imagery exploitation from today's world to the year 2003. It must be recognized that the cost of implementing the reengineered process will be significant and that ways to mitigate these costs must be aggressively pursued. Implementation of the reengineered process, however, is mandatory to continue meeting customer needs now and into the future.

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SECTION 1

INTRODUCTION

SECTION 1: INTRODUCTION

PURPOSE

This report documents the results of the imagery community's Exploitation Process Reengineering Study (ExPReS). This document is intended to be used to present the work of the ExPReS Team, inform the imagery exploitation community of the recommended future operational perspective, and provide the foundation for detailed implementation planning.

OVERVIEW

Recent planning efforts indicate the United States Imagery System (USIS) must undergo significant change to remain viable in the late 1990s and beyond. A new threat environment, evolving user requirements, the downsizing of the Federal Government, and the emergence of new technical capabilities are impacting the imagery intelligence process, the organizations performing that process, and the imagery support systems. The impact on the imagery exploitation process is expected to be dramatic.

Responding to these impacts, several technical initiatives to modernize and improve the imagery exploitation process have been proposed. However, technical solutions alone, such as the Exploitation Support System (ESS), were believed to be inadequate. Therefore, imagery exploitation initiatives were delayed at the direction of the Information Systems Board (ISB) until the fundamental business process of imagery exploitation was reexamined. In concert with Director, Central Intelligence (DCI) and Deputy Secretary of Defense (DEPSECDEF) guidance, the Central Imagery Office (CIO) initiated ExPReS.

ExPReS is a business process reengineering (BPR) project to improve the exploitation process through analysis, simplification, elimination of non-value-added activities, and employment of technology where appropriate.

The CIO has the responsibility of establishing and implementing the USIS. The CIO, in developing the USIS, considered the entire imagery cycle from requirements management through collection, processing, exploitation, and dissemination. The imagery community leadership concluded that the exploitation community cannot meet future demands without new methods for exploiting imagery including the resulting resources and support tools necessary. In this vein, the CIO published the imagery community's cornerstone document, the USIS Architecture Migration Plan (UAMP), which provides guidance for the imagery community into the next century.

ExPReS, by reengineering the USIS community's exploitation process, recommended modifying business processes where applicable and using appropriate enabling technologies in order to improve efficiency and ensure users receive quality imagery, imagery-based products, and imagery-derived information. The USIS vision defines quality as "the right imagery data...to the right users...in the right format...at the right time."

SCOPE

The ExPReS scope was limited to reengineering the imagery exploitation process. Exploitation encompasses the management, extraction, transformation, or analysis of imagery-derived information and the generation of products and/or services to satisfy consumer/user needs.

The USIS activities of Requirements Management, Collection, Processing, and Dissemination, as well as Archive Management were not included in the processes that were reengineered by the ExPReS. However, exploitation is performed within the context of the overall imagery intelligence cycle. The activities associated with the interfaces between exploitation and the other processes of the USIS were within the scope of the ExPReS. ExPReS developed recommendations directly affecting external processes.

ASSUMPTIONS

To permit a credible, cohesive future operational perspective, a number of assumptions were made, as delineated below. More specific assumptions related to specific opportunities and impediments are contained in Section 3, External Assessment.

Imagery Exploitation Assumptions

- Requirements for imagery, imagery-based products, and imagery-derived information will grow and evolve throughout the next decade
- Improvements in the imaging sciences and automated information systems technologies will enhance the USIS' potential to process, exploit, and disseminate imagery and imagery-based products
- Enhancements to technology will increase the number and type of collectors providing imagery data, across all regions (or bands) of the electromagnetic spectrum
- The USIS community will migrate to a lesser number of unique information systems.
- The USIS community will continue to evolve towards a digital environment.

ExPReS Assumptions

- The "TO-BE" model time-frame is 2003
- ExPReS will take into account community activities underway and planned (e.g., USIS 2000, Accelerated Architecture Acquisition Initiative [A3I], Intelink, the Global Command and Control System [GCCS], etc.)
- ExPReS will take into account opportunities offered by emerging advanced technologies (e.g., collaborative computing, automatic target detection, large screen displays, multi-media, networked communication).

PARTICIPATING ORGANIZATIONS

The BPR activity was conducted by the ExPReS Team. The Team was staffed by a combination of exploitation process experts and systems experts representing the Defense Intelligence Agency (DIA)*, the Central Intelligence Agency/ National Photographic Interpretation Center (CIA/NPIC), the Defense Mapping Agency (DMA), the Services, and the CIO. ExPReS Team members exchanged information and feedback with the various organizations they represented.

The CIO-chaired Exploitation Steering Group (ESG) provided the ExPReS with overall guidance, reviewed appropriate ExPReS products and results, and provided guidance for implementation of approved recommendations.

The Director, CIO will champion the approved recommendations to the DEPSECDEF and DCI for implementation decisions.

The National Security Agency (NSA), the National Reconnaissance Office (NRO), the Community Management Staff (CMS), the Defense Airborne Reconnaissance Office (DARO), the Defense Information Systems Agency (DISA), and the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD/C3I) provided advisory assistance, as appropriate, to the ExPReS Team.

BPR support to ExPReS was provided by a contractor team of BPR advisors, facilitators, and functional-area experts (SAIC and MITRE).

METHODOLOGY

The following paragraphs describe the tasks that were performed by the ExPReS Team to reengineer the imagery exploitation process. The approach is consistent with DISA's Center for Software (CFSW) (previously known as Corporate Information Management [CIM]) guidelines. The Team used a five-step process during the project.

Establish Framework (Task 1)

CIO obtained executive commitment from participating Government organizations and formed the ExPReS Team. The Team finalized the scope and defined the boundaries. The scope document (Framework Statement) was prepared by the ExPReS Team for coordination and approved by the ESG. A copy of the Framework Statement is attached as Appendix A.

* The Unified Commands were represented on the ExPReS Team by DIA

Analyze Internal and External Environments (Task 2)

The Team assessed both the internal and external exploitation environments using workshops and/or groupware sessions. The internal assessment examined the current imagery exploitation processes. This analysis included developing an "AS-IS" (current) process model using Integrated Definition (IDEF) tools as well as documenting the associated strengths and weaknesses.

The external assessment included a high-level examination of assumptions and future opportunities and impediments -- elements that could positively or negatively impact the exploitation process. This assessment also included benchmarking.

Review/Revise Guiding Statements (Task 3)

This task focused on developing an integrated set of guiding statements as the basis for reengineering the imagery exploitation process. Guiding statements in ExPReS included goals and objectives, which served as the foundation for developing the "TO-BE" (future) process model in Task 4.

Design Future Process (Task 4)

Using the knowledge obtained during the previous tasks, the ExPReS Team designed the future process. Option field analysis was used to permit the Team to develop options that satisfy the guiding statements, taking advantage of strengths and opportunities, and mitigating weaknesses and impediments. This design included developing a "TO-BE" process model as well as conceptual illustrations. A high-level benefit analysis was conducted to examine options and provide preliminary qualitative benefits from the reengineered process.

Develop Report (Task 5)

The ExPReS Team began to identify implementation issues for planning purposes and documented Tasks 1-4 in this report. The implementation planning portion of Task 5 (as specified in Appendix A) will be accomplished under CIO's Exploitation Initiative.

DOCUMENT CONTENTS

This document presents the internal assessment results (strengths and weaknesses), external assessment results (assumptions, opportunities, and impediments), guiding statements (goals and objectives), future operational perspective, recommendations, and implementation issues. The plan also includes appendices that address the ExPReS Framework, "AS-IS" and "TO-BE" IDEF process models, options, benchmarking results, ESG briefings, ExPReS functional characteristics, and other materials.

SECTION 2

INTERNAL ASSESSMENT

SECTION 2: INTERNAL ASSESSMENT

STRENGTHS AND WEAKNESSES

Analysis of internal strengths and weaknesses was used in the development of an improved "TO-BE" model (Appendix C) and the future operational perspective (Section 6). The following table of strengths and weaknesses was generated by the ExPReS Team as a roll-up of hundreds of individual inputs from Team members. Groupings are for convenience. This listing was validated on 10 March 1995 by the ESG.

"Strengths" and "weaknesses" of the imagery exploitation process, derived from the "AS-IS" model, are the key internal forces that impact the exploitation community's ability to achieve its goals. Strengths provide a positive foundation upon which the community may build to increase effectiveness and efficiency, while the weaknesses highlight areas needing improvement. ***Individual strengths and weaknesses are not necessarily universally true, as inputs were consolidated from many different organizational perspectives.***

Exploitation elements may have both strength and weakness aspects. For example, a strength aspect of the policies and procedures element is that this element is well documented. Concurrently, a weakness aspect of the same element is that policies and procedures are excessive and conflicting.

TABLE 2-1
EXPLOITATION COMMUNITY STRENGTHS & WEAKNESSES

EXPLOITATION PROCESS

Strengths	Weaknesses
1. Diverse, quality products	1. Capability shortfalls
• All source information utilized	• Unable to transform all inputs to useful outputs
• Answers the customer's needs (customer-focused)	• Security impediments limit potential
• Flexible, tailorable	• Customer demand is outstripping exploitation resources
2. Meets critical time constraints	2. Excessive cycle time
• Ad hoc surge capability	• Does not meet customer needs
• Effective task management	• Each step can be labor intensive
	• Excessive iterations between exploitation activities
	• Hardcopy especially manually intensive
	• Excessive management oversight and QA can slow down process
	3. Inflexibility
	• Unresponsive to customer
	• Standardized reporting leads to rigidity
	• Rapid pace of change makes management difficult
	4. Process is expensive
	5. Policies and guidance not current or flexible
	6. QA reactive versus proactive

MANAGEMENT

Strengths	Weaknesses
1. Leadership	1. No entity responsible for end-to-end process
• Leadership and their process understanding result in effective cooperation both internally and externally	
• Quality is monitored at the appropriate level	
2. Standards assist in timely and quality products	2. Standards are ineffective
3. Some areas of multiple product operations	• Inconsistent across community
4. Some multi-use activities	• Ignored if inconvenient
	• Insufficiently developed
	• Large variety of product formats
	3. Interdependencies not understood
	• Little understanding of how a change in one area affects other exploitation or USIS elements
	• Lack of coordinated activities and funding
	• Activities not integrated well
	4. Planning ineffective
	• Duplication of effort
	• Products produced with no current requirement
	• Difficult to change tasking
	• Inability to create good strategy
	• No effective sunset review of products

COMMUNICATION

Strengths	Weaknesses
1. Effective collaboration/coordination results in quality and timely products	1. Ineffective collaboration, coordination, and information sharing
	2. Ineffective community communication
	• Lack of common exploitation vision
	• Limited dialogue with customers
	• Limited customer understanding of the exploitation process

RESOURCE MANAGEMENT (Human, Physical, and Financial)

Strengths	Weaknesses
1. Experience base is deep	1. Skill level in jeopardy
	• Corporate knowledge not retained when experienced people leave
	• Lack of experienced people to analyze tasks
	• Resources not being sustained or increased
2. Exploiters dedicated and motivated to accomplish the mission	2. Inadequate allocation and prioritization of resources
	• IAs spend disproportionate amount of time on production activities
	• Tools not available when and where needed
	• Physical separation of production support resources adversely affects responsiveness and quality
	• QA cannot handle volume of activity
3. Training provides the basic tools necessary for exploitation	3. Training inadequate to produce skilled IAs
4. Significant investment in people, tools, and technologies	4. Technology insertion costs time and money
	• Imbalance of funding for collection versus exploitation
	• Resources decreasing with demand increasing

INFRASTRUCTURE

Strengths	Weaknesses
Automated Tools	
1. Assists each exploitation activity	1. Lack of tools within some activities
• Variety of mission specific and infrastructure tools to help accomplish mission	
• Rapid preparation for analysis and product generation	
• Rapid product builds	
2. Faster cycle times	2. Inadequate automated tools
3. Interoperability aids in process	3. Automated tools not interoperable between exploitation activities, exploitation organizations, and other USIS elements
	• Lack of standardized tools
	• Lack of common support systems
	• Lack of connectivity and integration
4. Better quality products	4. Automated tools inhibit flexibility
• Creates some de facto standardization	• Overly complex designs
• QA can effectively handle volume	• Designs are difficult to change
	• Systems drive activities
Data Formats	
1. Digital inputs allow for digital exploitation at some centers	1. Multiple data formats (both hardcopy and softcopy)
	• Inability to handle diverse imagery data
	• Insufficient interoperability
	• Media incompatibility
2. Standardized digital products are interoperable with customer systems	2. Inability to consolidate all materials for products
	• Cannot pull all information and imagery together
	• Cannot fully utilize data due to interface and interoperability problems

Strengths	Weaknesses
Access to imagery information	
1. Comprehensive information available in some centers	1. Inadequate (disconnects, quality, etc.) collection for exploitation
2. Some archives and databases available for query	2. Information and imagery not readily accessible
	• Manual access can take excessive time
	• Systems not connected
	• Materials inadequate for production
3. Local storage facilitates production	3. Information and imagery difficult to obtain
	• Insufficient access
	• Localized holdings limit sharing
	• Archives/databases not interoperable
	4. Archives
	• Data management and servicing are complex and dependent upon skilled personnel
	• Manual
	• Not centralized
	• Conflicting results from multiple database queries

SECTION 3

EXTERNAL ASSESSMENT

SECTION 3: EXTERNAL ASSESSMENT

ASSUMPTIONS, OPPORTUNITIES, AND IMPEDIMENTS

Analysis of externally driven opportunities and impediments was used to develop the improved "TO-BE" model and future operational perspective. The following table of assumptions, opportunities, and impediments was generated by the ExPReS Team as a roll-up of numerous individual inputs from Team members. Groupings are for convenience and generally reflect the interfaces between the imagery exploitation process and the external environment: controls (policies), inputs (imagery, collateral, etc.), mechanisms (technology/tools and resources), and outputs (products). The listing was validated on 10 March 1995 by the ESG; it includes refinements made by the ESG.

The following "assumptions" are the key factors that have been assumed for the exploitation community over the next eight years. An assumption may have both "opportunities" and "impediments" associated with it. Opportunities and impediments are external forces over which the exploitation community may have influence, but little control, because they originate or exist outside the exploitation process. These external forces may have a positive or negative impact on the exploitation community's ability to achieve the goals, which are in Section 4.

TABLE 3-1
EXPLOITATION COMMUNITY ASSUMPTIONS, OPPORTUNITIES, AND IMPEDIMENTS

Assumptions	Opportunities	Impediments
Policy		
• Variety of unique and specialized missions will continue	• Tailored support to users/customers • Permits distribution of requirements and competitive analysis • Tailored distribution • Centers of expertise	• May preclude some efficiencies • Management of standards
• Classification handling restrictions will decrease • Multi-Level Security (MLS) will begin to take effect • OPSEC restrictions will remain	• Reduce security overhead – Fewer compartmented systems – Reduced clearance restrictions – Less classified infrastructure • Ability to implement virtual/federated production – Other government – Foreign – Commercial • Improved interoperability and interface with customers	• Risks remain – Automation vulnerabilities – Intel data may remain at SCI • Increased costs due to downgrading systems, data, policies, and procedures • Conflicting organizational security policies
• Commercial sector's role will increase	• Leverage commercial investment for collection and exploitation – More flexibility for surge requirements – Enhanced development cycle for technology products • Take advantage of new or improved sensors	• Security • Quality of product • Competition • Cost savings are not proven • Reduced budgets to acquire commercial source • Loss of skilled personnel to private sector

Assumptions	Opportunities	Impediments
• Some kind of federated production will be implemented	• Maximize contribution of each exploitation center • Greater integration of allied capabilities	• Requires integrated exploitation management structure – Cultural sensitivities to outside direction • Required system infrastructure is costly • Federated production still needs to be worked out
• Tactical imagery exploitation requirements will increase	• Increase timely and responsive data to tactical commanders • Reallocate resources	• Start-up costs are high, and much training is needed • Data sharing • Resources
• Continued pressure for increased direct feeds of source imagery to end users – Customers are automating – Tools will be built that will support exploitation and direct reporting for warfighter – Exploitation still a requirement	• Reallocate resources • Provide dedicated and faster imagery support to customer	• Competition for collection resources • Impact is unknown • Potential for misuse of imagery • Deconfliction • Greater risk involved due to unreliable tools, stovepiped systems, complexity of integration, and quality control
• Increased customer emphasis on changing and non-traditional objectives -- environmental, economic security, etc.	• Increased exposure to new customers – Maintain recognition – Maintain relevance	• Defining new, emerging requirements. • Long-term production is made more sensitive to impacts of rapid change. • Obsolete requirements compete with new requirements
• Increasing volumes of imagery will not be exploited	• Prioritizing use of exploitation resources	• Risk of missing significant events
• Fusion of IMINT with all source information will continue	• Improved completeness and accuracy	• Can delay time critical reporting • Difficult to implement (cost, rules, etc.)

Assumptions	Opportunities	Impediments
• An identifiable IA corps will continue to exist despite pressure to the contrary	• Stable, skilled, and experienced workforce	• Pressure to integrate IAs with all source
• Community actively participates in efforts for greater standardization and interoperability	• Improved interoperability and communications capability • Lower costs	• Lack of understanding of community interrelationships • Temporary diversion of personnel from exploitation activities • Conversion costs • Potential to impede change and innovation
Imagery		
• USIS will migrate to an interoperable dissemination "system" for all primary imagery	• Easier and less costly access to all imagery • Easier and less costly to integrate new sources	• Absence of common standards to permit airborne, commercial, and ground based imagery collection systems to interface into primary dissemination system
• By 2003, the USIS infrastructure will significantly improve the access by the IA to relevant imagery derived from national, airborne, commercial, and handheld imagery sources – DMA will offer single source point for metadata on commercial imagery availability	• Enhanced exploitation throughput and improved quality • Potential to reduce diverging assessments	• Costs associated with establishing archives • Information overload • Higher expectations

Assumptions	Opportunities	Impediments
• Enhanced Imaging System (EIS) will be implemented • Imagery collected by a wide spectrum of collectors (airborne, operational platforms, allies, open skies, commercial, etc.) will be available in digital format to USIS IAs • Trend will continue toward increasing availability/use of video source imagery • Predominantly digital • NRO will continue to give more (imagery) • More real-time exploitation environment	• Evolution to more automated capabilities • Improved completeness (including synergy), timeliness, and accuracy of imagery exploitation and production • Value-added commentary	• Insufficient focus on exploitation, modernization, and integration to accommodate sources – Softcopy exploitation environment will not be ready for EIS • Resource constraints • Increased requirement for support information or control points to facilitate georectification • Increased potential for exploitation conflicts • Training
Collateral and Support Information		
• New collection systems will change exploitation support data	• Improved accuracy of imagery exploitation • Chance to help community standardize formats, structures, and systems	• System changes will be expensive • Challenges of managing the volume and complexity of data available
• Enhanced IA access to collateral information. (other INTs, Open Source, MC&G, Blue Force, etc.)	• Improve focus, timeliness, context, and relevance of exploitation and production • Access to terrain and other natural and cultural features facilitates exploitation	• Costs • Classification • Information overload and related problems • Staying ahead of information obsolescence • Coordination barriers between Ops and Intel development communities. • Heritage collateral information not automated

Assumptions	Opportunities	Impediments
Resources		
• Reduced budgets result in reduced resources and calls to streamline – Number of analysts will not increase and may decrease	• Catalyst for productivity improvements • Streamline mission and roles • Reserve, National Guard, training organizations, et.al., can be more efficiently used for exploitation and production	• Fewer resources to perform mission and implement changes/efficiencies • Personnel and morale problems may occur • Ineffective change management can cause greater problems • Cumbersome planning and budgeting cycles
• Basic imagery exploitation training will be consolidated and updated via on-line computer-based training	• Potential for common skill base • TDY cost savings	• Associated costs • Shortfalls in self-taught computer-based training • Cultural resistance to change
Tools and Technologies		
• A common, shared open architecture – Access to multiple imagery databases – Indices (metadata) available • Standard tools become prevalent • More interoperable standards • Continuing technology improvements for exploitation and exploitation management • COTS software tools advance faster than government development – Primarily use COTS	• Ability to share and reuse data • Makes integrated exploitation management possible • Provides ability to control costs • Potential to produce new and more diverse products needed by customers • Ability to acquire interoperable systems off the shelf • Reduced risk of non-synchronous databases. • Reduce O&M costs by having fewer databases to support.	• Associated acquisition, O&M, implementation, and training costs • Rapid obsolescence of systems and automated tools • Reliance on COTS will result in government following instead of leading technology

Assumptions	Opportunities	Impediments
• Mandate to use softcopy technologies based on USIS plans – Majority of imagery will be exploited in softcopy – Organization-specific proportions	• Potential for improved timeliness • Potential for reduced costs • Reduced hardcopy storage and archiving	• Maturity of technology • Associated costs of transition • Hardcopy is more efficient for some activities • Resistance to change • Mismatch between hardcopy management and softcopy technology
• Hardcopy exploitation will continue	• Ability to use historical hardcopy imagery from the archives • Flexible response to need to exploit broad area collection	• Programming for hardcopy infrastructure • Collector shifting hardcopy costs to customer • Sufficient hardcopy source • Vanishing light table vendors will result in maintenance and cost issues
• Improved technologies will make additional tools available to support exploitation. Examples include: – Digital MC&G data will be made available – Image registration capabilities will permit digital images and geographic information overlays from multiple sources – Enhanced on-line mensuration capabilities such as RULER will be available – Availability of Automated Target Recognition and Automated Change Detection tools	• More timely exploitation and reporting employing multiple sources • Enhanced and more accurate analysis • Improved products • Improved quality • Provides ability to simultaneously analyze and generate products • Mitigate personnel losses and increase productivity of remaining personnel	• Technical challenges and costs associated with implementation

Assumptions	Opportunities	Impediments
Products/Feedback		
• Products will change based on changing customer needs and emerging technologies – IAs will be able to select from a wide range of local output options (electronic, printers [up to mosaic size], video displays, and output media ranging across tape, discs, CD-ROMs, etc.) • Product dissemination will be predominantly digital (except CAC)	• Provide timely, tailored support defined by customer needs • Digital products should be cheaper to produce, reproduce, and disseminate	• Computerized customer systems will be more demanding of standardization • Support a wide range of output media • Numerous formats • Must maintain mixed-media of hardcopy and softcopy production capability • Associated costs of change
• Exploitation organizations will provide feedback to collection managers/collectors regarding degree to which collection satisfied exploitation requirements	• Collection and Exploitation will understand when they have satisfied requirements • Quantifiable measures of customer satisfaction can be developed	• Systems and procedures to provide exploitation and customer feedback not adequately developed

BENCHMARKING RESULTS

Several commercial and government knowledge-based organizations participated in a survey on innovative practices that may have application to the imagery exploitation community. Innovative practices provided insight into timeliness, efficiency, and effectiveness of exploitation community improvements. The following tables highlight this analysis. (For detailed information concerning these practices and their effects see Appendix E.)

TABLE 3-2
BEST PRACTICES OF KNOWLEDGE-BASED ORGANIZATIONS

Key Success Factors	Technology-Related Characteristics
• High percentage of analysis time versus preparation/research and product generation phases -- they have extensively automated the preparation/research and product generation phases	• More sources of information, all on-line and accessible from the desktop • A significant investment in information systems with its required support to maximize the potential of technology
Customer Interface Characteristics	**Other Characteristics**
• Significant amounts of customer interface and feedback • A broader definition of customer satisfaction that includes high levels of customer support and interface and the management of customer "anxiety levels" • Formal mechanisms to clearly define product features and capabilities to customer • Analyst responsibility and accountability for product quality and customer satisfaction	• Fewer product types • Some form of pricing mechanism to maximize product mix efficiency • Recently reengineered from top down • Reward systems that recognize and encourage employee innovation

TABLE 3-3
CHARACTERISTICS OF KNOWLEDGE-BASED ORGANIZATIONS

	Best In Class[1]	Exploitation Community
• Data sources	1670	27
• Data sources on-line	100%	53%
• Data sources on-line at desktop	100%	15%
• Number of product formats	6	16
• Number of reviews	0	4
• Amount of time for analysis	75%	38%
• Requests received on-line	99%	43%
• Distributed on-line	97%	37%

[1] Most efficient and effective of surveyed knowledge-based organizations

SECTION 4

GUIDING STATEMENTS

SECTION 4

GUIDING STATEMENTS

SECTION 4: GUIDING STATEMENTS

GOALS AND OBJECTIVES

Goals were developed by the ExPReS Team and presented to and revised by the Exploitation Steering Group on 10 March 1995. A list of objectives was developed for each goal. While an objective may support more than one goal, this listing associates each objective with only one goal. The date for achievement is 2003 unless specified.

GOAL I

GOAL I: Satisfy customer needs in terms of quality, timeliness, completeness, flexibility, and utility.

Objectives

A. Deliver high-quality products and services that are sufficiently accurate, concise, relevant, and complete (customer-requested information fulfilled).
B. Meet all timelines for both time-sensitive and non-time-sensitive requirements (at all echelons).

GOAL II

GOAL II: Increase productivity and increase production capability while decreasing cycle time.

Objectives

A. Increase the proportion of available analytic time.
B. Decrease proportion of non-analytic time.
C. Decrease average labor hours per product.
D. Decrease cycle time.
E. Minimize repeat work (focusing on too many loops through photo lab, QA, rebuilding products, and reducing repeated process steps, multi-looping).
F. Eliminate unnecessary conversions between hardcopy and softcopy (two-way flow).
G. Standardize terminology, naming conventions, metadata, and database entry formats (related to imagery, collateral, and support information).
H. Eliminate unnecessarily redundant imagery exploitation.
I. Establish community standards for all imagery exploitation products.
J. Reduce staging time for softcopy exploitation to allow real-time access to imagery.

GOAL III

GOAL III: Achieve connectivity, interoperability, and collaboration with elements both inside and outside the imagery exploitation process.

Objectives

A. Establish sufficient communication capacity to implement interoperability and collaboration objectives.
B. Standards-compliant equipment, software, and terminology established for 100% of imagery, supporting information, and requirements.
C. Digital imagery and information formats are compatible across USIS exploitation elements.
D Product formats are compatible with customer and system needs.
E. Provide standardized collaboration environment (to include video teleconferencing) that permits simultaneous viewing of softcopy imagery, supporting data, and text within each exploitation element.
F. Extend collaborative exploitation capabilities to include all exploitation elements.
G. Extend collaborative capability to all customers that so require.

GOAL IV

GOAL IV: Leverage emerging technologies.

Objectives

A. By 1996, establish a centrally managed community group to advise the R&D community and to survey, foster, and assess technology (such as COTS, GOTS, and R&D) for applicability to imagery exploitation and publish results quarterly.
B. By 1996, establish a coordinated exploitation community program for T&E of prototype and emerging technology.
C. By 1996, establish an exploitation development program as the basis for USIS exploitation initiatives.
D. By 1996, establish a process to identify and incorporate existing and projected needs of the IAs and cartographers into a community-wide R&D exploitation effort.
E. By 1997, establish community-wide exploitation technology development guidelines (targets, visions, requirements, etc.) and standards to guide developers.

GOAL V

GOAL V: Minimize the cost of change.

Objectives

A. Minimize the difference and maximize the interoperability of imagery and support data across the intelligence and MC&G communities.
B. Reduce the number of exploitation support information systems.
C. Given C4I system requirements, by 2000, all systems being delivered will be validated using community approved test criteria.
D. Systems will be designed, changed, and integrated in ways which minimize impact on operations.
E. Establish an environment for sharing common exploitation support capabilities between intelligence exploitation and MC&G centers.
F. Minimize the costs of system development, integration, and maintenance.

GOAL VI

GOAL VI: Support a well trained, motivated, and professional workforce.

Objectives

A. By 1997, create and maintain recommended community-wide KSAs (knowledge, skills, ability) criteria for IAs.
B. By 1997, create and maintain recommended community-wide KSA criteria for IA support personnel (managers, scientists, help desks, techs).
C. All exploitation personnel will be supported by professional training programs.
D. All exploitation employees will be trained in appropriate technologies, processes, and techniques.

GOAL VII

GOAL VII: To the maximum extent, achieve a digital environment.

Objectives

A. Ability to use digital data (imagery, imagery support information, and collateral information) for all exploitation tasks from receipt through product dissemination.
B. Ability for exploiters to access digital data (imagery, imagery support information, and collateral information) from archives and/or source in timelines that support exploitation requirements and customer needs.
C. Ability to convert all hardcopy/analog inputs to support digital production.
D. Ability to convert all hardcopy/analog inputs to support exploitation timeline requirements.

E. Ability to disseminate all output in digital form.
F. In support of exploitation activities, management, tasking, administration, and reporting will be predominantly done electronically.

SECTION 5

KEY RECOMMENDATIONS & BENEFITS

SECTION 5: KEY RECOMMENDATIONS & BENEFITS

KEY RECOMMENDATIONS

The ExPReS Team proposes the following recommendations in response to the key findings:

Implement a Base of Knowledge (BOK)

The BOK is a virtual database that spans all exploitation elements and reaches beyond exploitation. The BOK links a vast array of sources and information. Some characteristics of the BOK include, but are not limited to: timely access to all sources of information, with automated, user-friendly navigation tools; metadata on all information; filtering capabilities which provide only the information required; and layering of information. The BOK includes intelligence (classified or open source) and MC&G products, information, and data; exploitation task information including linkages to collection and all source tasking; standards, formats, and templates; source materials; registry of organizational personnel expertise; and supporting help, tools/applications, and training materials.

Establish a Coordinated Community Environment

The main items in a coordinated community environment are: integration and effective use of community resources; an interoperable environment with standards for products, systems, and data; development and maintenance of a registry of organizational and personnel skills; deconfliction of requirements by aligning expertise/mission with customer needs ("lanes in the road"); consolidation of product types; integration of technology efforts; and a harmonized exploitation voice within the USIS.

Enable Seamless Execution of Tasks

Establish a standard, digital environment with modular workstations, access to the BOK, required tools, and a single point of entry with multi-level security. Provide a collaborative environment that connects required expertise and customers (e.g., electronic "meeting rooms"). Develop a proactive task management structure that effectively uses resources, pre-stages materials, and provides assistance when needed. Record results in standardized layers for information reuse, and the generation and tailoring of products.

Build an Advanced Technology Infrastructure

Design and implement a standards-driven integrated exploitation infrastructure (connectivity, interoperability, and collaboration) to enable the implementation of the BOK and facilitate the insertion of technology. Establish a program to coordinate technology insertion from development through operations and maintenance.

These four recommendations are interdependent and together improve the exploitation process. The advanced technology infrastructure provides the foundation for the exploitation process and BOK recommendations. The BOK provides the information required for the coordinated community environment and the seamless execution of tasks. The community environment provides the structure, guidance, and standards that will ensure the process and infrastructure work efficiently and effectively. The process itself takes advantage of advanced technology, the BOK, and the coordinated community environment to achieve many of the improvements.

BENEFITS

Implementation of the key recommendations will result in benefits to both customers and exploitation elements.

- Customers and analysts/cartographers will have timely access to information, facilitating higher quality products
- New exploitation will use and build upon existing data
- Products, systems, and data standards will facilitate an interoperable environment
- Collaborative capability will leverage expertise, information, and tools across the community
- Resources will be efficiently used through the effective alignment of community expertise/missions with customer needs
- Visibility of community-wide tasking will allow for rapid deconfliction and collaboration
- Automation within the exploitation process will reduce the time between identification of need and answer
- Large amounts of data will be tailored to support customer information needs
- Coordinated training programs will promote a professional workforce throughout the exploitation environment
- Coordinated technology development will reduce cost and increase effectiveness across the community.

In conclusion, ExPReS has made a significant contribution to USIS by documenting the challenges of the future, analyzing the exploitation process, and identifying specific actions required to reengineer the process. In order to fully realize the benefits of these recommendations, detailed implementation strategies must be developed to incorporate the needed technologies and to move imagery exploitation from today's world to the year 2003. It must be recognized that the cost of implementing the reengineered process will be significant and that ways to mitigate these costs must be aggressively pursued. Implementation of the reengineered process, however, is mandatory to continue meeting customer needs now and into the future.

The following table illustrates how anticipated qualitative benefits facilitate the achievement of ExPReS goals.[1]

TABLE 5-1
MAPPING OF QUALITATIVE BENEFITS TO EXPRES GOALS

BENEFITS	Goal 1: Customer Satisfaction	Goal 2: Productivity	Goal 3: Connect., Interop., & Collab.	Goal 4: Technology	Goal 5: Cost of Change	Goal 6: Workforce	Goal 7: Digital Environ.
• Customers and analysts/cartographers have timely access to information, facilitating higher quality products	√	√	√	√			√
• New exploitation will use and build upon existing data	√	√	√	√			√
• Products, systems, and data standards facilitate an interoperable community	√	√	√	√	√		
• Collaborative capability leverages expertise, information, and tools across the community	√	√	√	√			√
• Resources are efficiently used through the effective alignment of community expertise/missions with customer needs	√	√	√			√	
• Visibility of community-wide tasking allows for rapid deconfliction and collaboration	√	√	√	√			√
• Automation within the exploitation process reduces the time between identification of need and answer	√	√	√	√			√
• Large amounts of data are tailored to support customer information needs	√			√			√
• Coordinated training programs promote a professional workforce throughout the exploitation environment	√	√	√	√	√	√	√
• Coordinated technology development reduces cost and increases effectiveness across the community	√	√	√	√	√		√

[1] For the complete wording on goals see Section 4.

SECTION 6

FUTURE OPERATIONAL PERSPECTIVE

SECTION 6

FUTURE OPERATIONAL PERSPECTIVE

SECTION 6: FUTURE OPERATIONAL PERSPECTIVE

This section describes the ExPReS recommendations and their interrelationships. It summarizes how the redesigned exploitation process will work from the customer's and exploitation's viewpoint.

Building on its goals and objectives, the ExPReS Team considered more than 220 options for improvement. A detailed listing of options is contained in Appendix D. These options were not equally applicable to all organizations, but helped to establish a framework for optimizing the imagery exploitation process. Four specific recommendation themes emerged that were used to develop a future operational perspective:

- Base of Knowledge
- Coordinated Community Environment
- Proactive, Seamless Execution of Tasks
- Advanced Technology Infrastructure.

Although described in turn, these key themes work in concert.

BASE OF KNOWLEDGE (BOK)

The BOK will be a virtual database that spans all exploitation components, other USIS elements, customers, and other Federal and commercial organizations. The BOK will connect users to a vast array of distributed information including such sources as Intelink, historical information, imagery archives and databases, and other on-line sources of information. Automated, user-friendly tools (e.g., search engines and gophers) will allow rapid navigation. Filtering capabilities will ensure that only requested information will appear at the workstation. Workstations will also provide single point of entry and multi-level security.

The BOK will provide access to products/information/data, requirements and tasks, sources, SOPs, registry of expertise, and requests for support (see Table 6-1). Information from the BOK will flow throughout an integrated working environment. Widespread participation will be supported by collaborative tools and services, such as virtual "meeting rooms" for collaboration on specific topics and a coordinated community help desk (see Customer's Viewpoint, below).

Much of the BOK information will be geospatially registered and filed as layers to facilitate access and reuse. These layers should include areas of information such as map, terrain features, imagery, imagery intelligence, other intelligence sources, operations data, and weather. Exploitation elements will be responsible for populating and maintaining their particular layers (e.g., DMA for MC&G), and anyone with appropriate accesses can obtain data from the layers. Layering helps customers satisfy their needs, helps analysts tailor their products, and provides opportunities for reusing data.

TABLE 6-1
REPRESENTATIVE ELEMENTS - BASE OF KNOWLEDGE

Products/Information	Requirements and Tasks
• Intelligence • MC&G	• Exploitation requirements and tasks • Linkage to products • Linkage to collection • Linkage to all-source • Status
Registry of Expertise	**Support**
• Organizational • Personnel	• Help desk • System status • Tools/applications • Training materials
Sources	**SOPs**
• Imagery • Collateral information • Support information • Geospatial	• Community • Organizational • Functions • Templates • Formats • Standards (common elements)

CUSTOMER'S VIEWPOINT

How will a customer receive an answer to an information need? Many customers will access the BOK directly and query the product/information/data layers. (Note: Customers will still have access to exploitation personnel for support of needs not answered by direct access.) Since the BOK will have a standardized, layered format (which includes information as well as completed products), a customer could tailor an output and would not need to generate a new task.

If the customer is not satisfied with the information available, they may request additional information through the BOK, through their pre-established exploitation contact, or through the coordinated community help desk. The information need will be registered in the BOK either automatically by the customer's workstation, by the exploitation contact, or by the help desk.

Registering the need will initiate the imagery exploitation process. The need will move to the appropriate exploitation element. The element will provide validation, an estimated time for completion, and continuing status which can be viewed by the customer. In addition, the need will be visible throughout the community so that any customer (or analyst) may know when that information will be available. This visibility will provide timely products to multiple customers, while decreasing the number of information requests.

The need will trigger the information/product type (i.e., templates) and the level of collaborative interaction required by the customer (from no contact to full, interactive communication with analysts). Customer collaboration as well as collaboration with technical support staff will be facilitated by the advanced technology infrastructure. Where appropriate, intermediate answers will be provided as part of this collaboration. When the customer's request has been satisfied, the information/product will be made available in the BOK to encourage reuse.

The coordinated community help desk will provide customers, organizations, managers, and exploitation personnel with help 24 hours a day. The help desk will be accessible in a variety of ways, with the preferred mode being a fully interactive (video, voice, and text) dialogue with help personnel. The help desk will be supported by exploitation elements through the use of collaboration tools. The help desk, much like a library, includes people, manuals, training guides, and smart tools for browsing.

EXPLOITATION'S VIEWPOINT

How does the new imagery exploitation process work? The core value-added activity of exploitation (imagery analysis) will be strengthened by an advanced support environment including digital data end-to-end, a digital exploitation toolkit, and collaborative tools. This advanced support environment will increase the proportion of analytic time, thus increasing throughput and decreasing cycle time.

Exploitation's viewpoint encompasses both the coordinated community environment and the seamless execution of tasks. The coordinated community environment facilitates activities within the community and interactions between the community and external parties. The seamless execution of tasks deals with the day-to-day administration and workings of how an information need is turned into an answer.

Coordinated Community Environment

The coordinated community environment will provide a unified voice for the exploitation community within USIS. A basic concept of the coordinated community environment is "lanes in the road." These are pre-established missions and responsibilities. ExPReS did not redefine organizational missions or how organizations are managed. Most incoming information needs will fall into pre-existing mission areas of a particular organizations. These needs will go directly to the organization and/or analyst. One example is the continuing dialog between an analyst and a customer. Through the BOK, the community will have visibility over the registered information need and the information produced, thus, facilitating reuse.

If there is a conflict or a new type of information need is generated, the community will collaborate to determine who should lead and/or support the information need and may establish a new or modified "lane in the road." The community can also have multiple organizations involved to take advantage of expertise and resource availability.

The community will take the lead in standardization. A key concept is providing a standardized set of products, product types, and data elements. In addition, the community will standardize use of the BOK and establish data management structures to ensure accurate database population and maintenance. Product types will provide a standard way of organizing those layers of information. Community-wide standards will also be established for multi-level security.

The community will also standardize community infrastructure to reduce the cost of change and increase exploitation flexibility.

Requirements for the advanced technology infrastructure and the BOK will be coordinated by the community, as will research, development, test, and evaluation programs of common benefit. This coordinated technical approach will leverage limited acquisition resources, ensure required interoperability, and allow the community to present a unified case for keeping pace with the rapidly advancing exploitation technology.

In order to best use resources, the community will establish and maintain registries of organizational and personnel expertise.

The community will develop and maintain, in coordination with organizations, exploitation training programs. These programs will meet community core needs with modules available to address specific organization/mission needs. Training will make extensive use of computer-based, on-line services.

Seamless Execution of Tasks

The activities necessary to complete imagery exploitation are Manage, Exploit, and Provide Services. In the future, these activities will be performed seamlessly in an all digital environment to allow any process to be performed at the appropriate point to satisfy customer needs. Interruption of work in progress may occur as necessary to accommodate changes in priorities or to account for the availability of resources and data.

Manage

Each imagery exploitation organization will manage operations, assign tasks, and manage workload. Each exploitation organization determines, through standard organizational procedures, how to optimize the use of their resources given the customer's priority of the task. Information such as when the task will be completed, points of contact, and the status of the task is stored in the BOK for community and customer access.

To minimize the preparation time, information associated with tasks can be pre-staged using profiles and preferences that can be created or modified by exploitation personnel. Pre-staging can occur at any point in the process. Each point in the process can have profiles/preferences so that appropriate materials are proactively routed to exploitation personnel. Profiles can either be run automatically or on demand based on a particular type of requirement.

The analyst will periodically review all the tasks in their workload. Each task will have task attributes such as a description, associated pre-staged materials, and a priority that can be modified through appropriate collaboration. Consistent with priorities, exploitation personnel will choose which task to work on and can come back to this point at any time. The exploitation infrastructure will provide for multi-tasking, allowing the analyst to work on multiple tasks based on the availability of information and time.

Exploit

Collaboration is an important part of the new imagery exploitation process. Exploitation personnel will have a number of choices for collaboration. They may collaborate to understand the task better or enhance the quality of analysis. The advanced technology infrastructure will provide collaborative tools such as video teleconferencing, and virtual meeting rooms with access from the workstation.

- ***Build Context***

When ready to start a task, the analyst first develops the required context. The tasking and any pre-staged information will arrive based upon earlier activities and tools such as automatic target detection and cueing tools. The analyst will gather any necessary additional materials (beyond those pre-staged), collaborate where needed, and organize the workstation displays to best suit the task. Any of these activities may be activated via profiles/preferences. The analyst will identify any gaps in the available information and access the BOK for any additional materials such as historical imagery, collateral data, or a layer in the product/information/data. If something vital is missing, such as adequate imagery, the analyst will order it through standard procedures and linkages also provided. The analyst will receive confirmation of the requirement, an estimate of when the imagery will be available, and current status.

Collaboration is an important part of the new exploitation process. The analyst has a number of choices for collaboration so that they can understand the task better or enhance the quality of analysis. The advanced technology infrastructure will provide collaborative tools at the workstation such as multi-window video teleconferencing and virtual meeting rooms.

- ***Analyze***

Analyze continues to rely primarily on the human ability to develop information from imagery. The future digital environment will provide the sophisticated tools at the workstation to support and aid the analyst in this function. These tools will be available in a digital toolkit containing such tools as imagery manipulation, automatic target recognition, and mensuration. These tools will be available in menus as requested in the profiles and will be accessible on the workstation or through downloading.

Analysts will have the ability to order special services on-line and through the collaborative environment. For instance, if a major mensuration task is needed, the analyst can request this service on-line and have it delivered to their workstation.

- ***Generate Information***

When analysis is complete, results will be recorded in standardized layers of the BOK. These layers will be designed to store the information for access by customers and other community members. For each task, templates (standardized output formats) and digital tools will be provided at the workstation to assist in providing information/products to the customer and to the BOK. The information or product will receive one formal quality review before being released to either the customer or BOK.

Provide Services

Provide services will support a wide range of activities across the exploitation community and its customers. Services will support all aspects of exploitation so that analytic time is optimized. These services, in general, will be of common concern and historically often require extensive resources. Through the collaborative environment, these services will be accessed by the community, thus, facilitating reuse, efficient use of resources, and the ability to build "centers of excellence."

Special technical support will provide specialized tools and services for the analyst. Services in this category include such areas as image manipulation, video labs, photo labs, converting images from hardcopy to softcopy, and making models. These services can be ordered on-line and are provided, where feasible, from layers in BOK.

Information Systems (IS) support will provide direct support to the exploitation process in accessing and interacting with information systems. This support will help analysts, supervisors, or customers modify their profiles/preferences. Another role will be to ensure that local systems can interface with systems maintained both within and outside of exploitation. This service includes modifying applications, systems, and digital toolkits (COTS, GOTS, proprietary) as needed. This service excludes maintenance and operation of major systems that reside at the community or higher levels. IS support ensures that data integrity is maintained as well as synchronizing databases within their span of control. Most of these services will require specialized personnel and may require significant resources. By investing in these specialized personnel, analysts will be able to focus on the imagery exploitation activity.

Training will be a major community activity that makes extensive use of computer-based, on-line services. The training activity will coordinate various training programs across the exploitation community and provide interactive methods for training to be accessed from workstations. This training will be based on the imagery community's core needs with modules available to address specific organization/mission needs.

ADVANCED TECHNOLOGY INFRASTRUCTURE

Supporting the entire process will be a connected, integrated, and interoperable infrastructure. This infrastructure will support the BOK which, in turn, will enable the coordinated community environment and seamless execution of tasks. The infrastructure is predominantly digital with hardcopy processes used only when required.

The four recommendation themes (Base of Knowledge; Coordinated Community Environment; Proactive, Seamless Execution of Tasks; and Advanced Technology Infrastructure) working together will improve imagery exploitation and result in customer benefits.

ADVANCED TECHNOLOGY INFRASTRUCTURE

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The four recommendation themes (Base of Knowledge; Coordinated Community Environment; Proactive, Seamless Execution of Tasks; and Advanced Technology Infrastructure) working together will improve imagery exploitation and result in customer benefits.

SECTION 7

IMPLEMENTATION ISSUES

SECTION 7: IMPLEMENTATION ISSUES

STATUS OF IMPLEMENTATION PLANNING

This section was originally intended to contain an implementation strategy for follow-on actions based on the ExPReS concepts and "TO-BE" design. Due to an organizational and policy transition period associated with the confirmation of Dr. Deutch as the new DCI and resulting plans for a National Imagery Agency (NIA), a detailed strategy was not practical at the time this document was published. However, the ExPReS effort should serve as an excellent starting point for exploitation improvements through 2003, no matter the organizational structure that results from NIA.

In response to requests from the DCI, other policy makers, and financial managers, CIO initiated interim planning and programmatic actions, some of which relate to exploitation. These relevant portions have generally been grouped under the term "EXPERT[1]." Built upon the ExPReS recommendations, EXPERT is a proposed implementation strategy which will be coordinated across the USIS community.

The ExPReS Team identified implementation issues recommended for follow-on decisions, detailed definition, and action. The section below addresses these issues.

FOLLOW-ON IMPLEMENTATION ISSUES

The ExPReS Team recommended several implementation issues be resolved in follow-on actions to the ExPReS effort. There are relationships and dependency overlaps between most of these areas, as summarized below.

Perform Wrap-up to ExPReS

Although ExPReS is essentially complete, follow-on coordination and wrap-up activity is recommended to ensure the widest and most accurate appreciation of the ExPReS results. While somewhat administrative in nature, these actions are required to maintain a bridge to implementation efforts.

- Coordinate the ExPReS results via this document and briefings to stakeholders and interested parties
- Clarify ExPReS vs. EXPERT relationships for the imagery community
- Provide input to other initiatives where ExPReS findings are applicable
- Support exploitation initiative working groups.

[1] ExPReS Program for Enhanced and Reengineered Technology

Modify Existing Policies or Establish New Policies to Set the Stage for Implementation

The ExPReS Team identified those aspects of ExPReS concepts and recommendations that had a distinct policy impact. The Team recommends that Executive Agents be designated for each of the five major policy areas listed below. The Executive Agent is responsible for coordinating a community-wide position in these areas.

Customer

The following customer policies facilitate customer satisfaction.

- Customer access to BOK
- Customer satisfaction metrics
- Customers' workstations are compatible for collaboration and data exchange.

Community Issues

Policies spanning the entire exploitation community permit effective implementation of ExPReS recommendations.

- Exploitation community authority and charter for ExPReS implementation actions
- BOK registries - task, expertise (organizational and personnel), and R&D projects and technology
- "Lanes in the Road"/Centers of Excellence
- Community help desk/services
- Pre-staged materials across organizations
- Intelligence resource management coordination
- End-to-end digital exploitation
- Coordination with other organizations/working groups (e.g., standards bodies and other USIS elements)
- Community security reciprocity.

Standards

The following standards will permit interoperability and effective collaboration.

- Quality control
- Products
- Configuration management
- Data (including metadata)
- Interoperability and human interface
- Communications (including protocols, encryption, compression, etc.)
- Sign-on, security, and access to BOK
- Technology tools, systems, software, and softcopy workstations

- Open systems
- Research, development, test, and evaluation
- Collaboration.

BOK/Technology Infrastructure

In order to establish the BOK and the technology infrastructure, the following policy areas need to be addressed.

- BOK with functional and information requirements, roles, and responsibilities
- Common geographic reference base (DMA's Global Geospatial Information and Services)
- Community contracts for hardware and software maintenance (O&M)
- Organizational full life cycle cost models for exploitation systems and use to evaluate change proposals
- Software development
- System integration
- Community research, development, test, and evaluation program.

Personnel

The following personnel policies permit the building of a well-trained, professional workforce.

- Community training program
    - Training and certification
    - Knowledge, skills, abilities (KSAs) standards
    - Coordination with General Intelligence Training System (GITS).

CIO Sponsor Exploitation Community Authority and Charter for ExPReS Implementation Actions

An implementation strategy is essential to implement ExPReS recommendations. As such, the ExPReS Team recommends that CIO coordinate or direct execution of implementation actions.

- Designate structure to coordinate/direct efforts
- Develop and coordinate charter
- Plan and acquire resources for implementation actions
- Participate in and coordinate the conduct and results of various working groups related to ExPReS recommendations
- Acquire resources to operate
- Develop and implement transition plans to achieve the new structure.

SECTION 8

ACRONYMS

Harmonize ExPReS with USIS Planning

The ExPReS Team recommends detailed follow-on analysis, revision, and coordination of other USIS planning efforts such as plans, architectures, CONOPS, and initiatives.

- Coordinate revisions to USIS plans, architectures, CONOPS, and initiatives
- Determine and resolve potential migrations (scope and allocation of functions/technology) among USIS component activities, based on ExPReS concepts (e.g., as driven by BOK).

SECTION 8: ACRONYMS

A3I	Accelerated Architecture Acquisition Initiative
ASD/C3I	Assistant Secretary of Defense for Command, Control, Communications, and Intelligence
BOK	Base of Knowledge
BPR	Business Process Reengineering
C4I	Command, Control, Communications, Computers, and Intelligence
CAC	Civil Application Committee
CD-ROM	Compact Disk - Read Only Memory
CFSW	Center for Software
CIA	Central Intelligence Agency
CIM	Corporate Information Management
CIO	Central Imagery Office
CMS	Community Management Staff
CONOPS	Concepts of Operation
COTS	Commercial Off The Shelf
DARO	Defense Airborne Reconnaissance Office
DCI	Director, Central Intelligence
DEPSECDEF	Deputy Secretary of Defense
DIA	Defense Intelligence Agency
DISA	Defense Information Systems Agency
DMA	Defense Mapping Agency
EIS	Enhanced Imaging System
ESG	Exploitation Steering Group
ESS	Exploitation Support System
EXPERT	ExPReS Program for Enhanced and Reengineered Technology
ExPReS	Exploitation Process Reengineering Study
GCCS	Global Command and Control System
GITS	General Intelligence Training System
GOTS	Government Off The Shelf
IA	Imagery Analyst
IDEF	Integrated Definition
IMINT	Imagery Intelligence
INT	Intelligence
IS	Information Systems
ISB	Information Systems Board
KSA	Knowledge, Skills, and Abilities
MC&G	Mapping, Charting, and Geodesy
MLS	Multi-Level Security
NIA	National Imagery Agency
NPIC	National Photographic Interpretation Center
NRO	National Reconnaissance Office
NSA	National Security Agency

O&M	Operations and Maintenance
OPSEC	Operational Security
QA	Quality Assurance
R&D	Research and Development
SCI	Sensitive Compartmented Information
SOP	Standard Operating Procedure
T&E	Test and Evaluation
TDY	Temporary Duty
UAMP	USIS Architecture Migration Plan
USIS	United States Imagery System