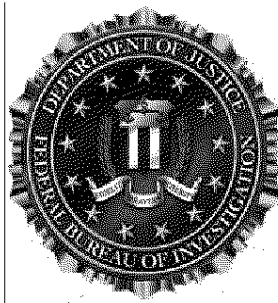## Next Generation Identification (NGI)

Facial Recognition Trade Study Plan
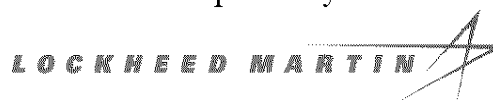
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May 25, 2010

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Contract No. J-FBI-08-041
CDRL NGI-62

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PREFACE

This Facial Recognition Trade Study Plan was prepared by Lockheed Martin (LM) for the Federal Bureau of Investigation (FBI) Criminal Justice Information Services (CJIS) Division Next Generation Identification (NGI) Program.

This Trade Study Plan conforms to Data Item Description (DID) specified in section J of the NGI Solicitation; NGI Contract Data Requirements List, Version 1.2 dated July 16, 2007. Traceability to the DID is documented in Table 1: NGI DID Traceability Matrix.

The Trade Study Plan is required by the NGI Statement of Work dated June 11, 2007. SOW traceability is documented in Table 2: SOW Compliance Matrix.

Table 1: NGI DID Traceability Matrix

Para No.	DID Paragraph Text	Document Section
DID NGI-62 10.2	Establishing the problem, including the outcome requirements and constraints	1 Scope 3.1 SRS Requirements 3.2 Architectural Context
DID NGI-62 10.2	Reviewing the study inputs to determine conflicts and completeness	4.3 Performance Evaluation
DID NGI-62 10.2	Selecting the trade-off methodology and selection criteria, to include weighting	4 Study Methodology 4.3 Performance Evaluation Attachment A
DID NGI-62 10.2	Identifying, selecting, and excluding candidate alternatives	4.1 COTS Evaluation 4.1 Vendor Notification
DID NGI-62 10.2	Developing models, measures of merit/metrics, and assessment techniques	4.3 Performance Evaluation Attachment A
DID NGI-62 10.2	Developing analysis plans, methods, and strategies	4.3 Performance Evaluation Attachment A
DID NGI-62 10.2	Designing reporting methods, formats, and media	4.4 Final Recommendation
DID NGI-62 10.2	Establishing the study schedule, resources required, and schedule for those resources	5.2 Government Furnished (Resources) 6 Schedule
DID NGI-62 10.2	Documenting internal and external plan reviews and approvals	4.4 Final Recommendation 6 Schedule

Table 2: SOW Compliance Matrix

SOW Para No.	SOW Text	TSP Document Section
3.3.3	The Contractor shall conduct trade studies to analyze each design alternative and identify the associated tradeoffs in the areas of performance, functionality, life cycle and development cost, schedule, risk, and supportability.	All sections of this document
3.3.3	The Contractor shall establish criteria (to include life-cycle cost) for the evaluation and selection of non-developmental items (NDI).	3.1 SRS Requirements 4.3 Performance Evaluation Attachment A
3.3.3	The Contractor shall develop prototypes and simulations and conduct trade studies to support NDI selection.	All sections of this document
3.3.3	The Contractor shall recommend specific NDI for incorporation in the NGI system.	4.4 Final Recommendation

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1 SCOPE

This plan defines the analysis study to evaluate potential solutions for meeting the NGI facial recognition requirements. The candidate solutions will be evaluated for their ability to perform Facial Recognition Searches against a facial photo repository. In the context of this study, the term solution is defined to be the combination of one or more algorithms together with the core software needed to meet the specified and derived requirements. The focus of this study is the evaluation of Commercial-off-the-Shelf (COTS) products.

This trade study will have a different approach than the previous two NGI trade studies. The previous NGI trade studies were performed in two phases which included vendors responding to a set of capability and requirements based questions to allow for a down select and assist in detailed schedule planning of the actual performance tests. A fixed number of vendors were then invited to participate in the second phase of the study where their proposed solution was installed on NGI hardware within the NGI trade study lab and thoroughly tested and compared. During the performance tests, the vendors were requested to respond to a Request for Proposal (RFP). The test results were analyzed and used along with the RFP response to determine the best overall solution for NGI. While this approach worked well for the selection of the solution for the large scale tenprint and latent fingerprint search solutions, the facial matching workload for NGI is much smaller than the tenprint and latent search workload, so it is expected that the facial biometric contract award will be worth far less. This makes the participation in a head-to-head test a much higher risk to reward ratio for the vendors. This cost and risk would likely prevent all but the largest vendors from participating. This type of testing also requires a significant NGI trade study staff to define, develop, perform and analyze the performance tests. Another consideration was that facial recognition algorithms are not nearly as mature as the leading fingerprint match systems.

The face trade study will include a "paper" evaluation of COTS vendor solutions. Since facial matching solutions are less complex than fingerprint matchers, the facial SDK testing that NIST is performing in the NIST Multiple Biometric Evaluation (MBE) Still test will provide accuracy results that are representative of the COTS vendors' full solutions that NGI performance testing would provide. That along with CJIS providing the same operational mug shot imagery that a NGI trade study test would use, allows the face trade study to utilize the NIST test results as the empirical head-to-head accuracy comparison of the COTS accuracy. Similar to the previous trade studies, the potential COTS vendors will be provided an RFP and the resulting COTS vendor proposal and NIST empirical test results will be used to determine the best value solution for NGI.

2 REFERENCES

1. ANSI/NIST-ITL 1-2007, Data Format for the Interchange of Fingerprint, Facial, & Other Biometric Information – Part 1, dated May, 2007

2. NGI Statement of Work, NGI-DOC-06123-1.3, dated February 2009

3. NGI Contract Data Requirements List, version 1.3, dated February 2009

4. LM NGI Systems Engineering Management Plan, NGI-DOC-05508-4.1, dated June 12, 2009

5. LM NGI Incremental Development Plan, NGI-DOC-02229-6.0, dated June 9, 2009

6. NGI System Requirements Specification (SRS), NGI-DOC-01276-4.0, dated June 9, 2009

7. NIST Multiple-Biometric Evaluation (MBE) Still Face Image Track Concept, Evaluation Plan and API, Version 1.0.0, dated February 1, 2010

8. NGI Interstate Photo System (IPS) Enhancements Concept of Operations, IAFIS-DOC-010480-5.0, 04/14/2010

3 REQUIREMENTS AND CONSTRAINTS

3.1 SRS REQUIREMENTS

The following NGI System Requirement Specification (SRS) requirements will be the initial basis for comparison of performance metrics.

Accuracy Requirements

Table 3.1-1 shows accuracy requirements as they currently are known.

Table 3.1-1 Accuracy Requirements

SRS2246	The NGI System shall return the correct candidate a minimum of 85% of the time within the top 50 candidates, when it exists in the searched repository, as a result of a facial recognition search in support of photo investigation services.
SRS2252	The NGI System shall return the correct candidate a minimum of 75% of the time, when it exists in the UPF, as a result of a cascaded facial recognition search of the UPF.

3.1.1 Response Time Requirements

Facial response time requirements are shown in Table 3.1-2. Note that these response time requirements are for the entire NGI system which will be further broken down to provide a biometric solution level response time requirement.

Table 3.1-2 Response Time Requirements

SRS2355	The NGI System shall respond to all Facial Recognition Searches that do not require nonstandard intervention in less than or equal to 2 hours of receipt by NGI.
SRS2363	The NGI System shall complete all cascaded Facial Recognition Searches in less than or equal to 24 hours of NGI completing the original request.

3.1.2 Workload Requirements

Applicable Workload requirements are shown in Table 3.1-3.

Table 3.1-3 Photo Workload Requirements

SRS3315	The NGI System shall be capable of processing the estimated average hourly workload for Facial Recognition Search Requests contained in the row identified as applicable to Facial Recognition Searches in the Average Hourly Photo Workload Estimates table.
SRS3316	The NGI System shall be capable of processing the estimated average hourly workload for adding to the UPF via Facial Recognition Search Requests contained in the row identified as applicable to UPF Add in the Average Hourly Photo Workload Estimates table.

SRS3343	The NGI System shall be capable of processing the peak hourly workload for Facial Recognition Search Requests that is 150% of the average hourly workload contained in the row identified as applicable to Facial Recognition Searches in the Average Hourly Photo Workload Estimates table.	
SRS3344	The NGI System shall be capable of processing the peak hourly workload for adding to the UPF via Facial Recognition Search Requests that is 150% of the average hourly workload contained in the row identified as applicable to UPF Add in the Average Hourly Photo Workload Estimates table.	
SRS3405	The NGI System shall be capable of processing the estimated yearly workload for Facial Recognition Search Requests contained in the row identified as applicable to Facial Recognition Searches in the Yearly Photo Workload Estimates table.	
SRS3406	The NGI System shall be capable of processing the estimated yearly workload for adding to the UPF via Facial Recognition Search Requests contained in the row identified as applicable to UPF Add in the Yearly Photo Workload Estimates table.	
SRS3415	The NGI System shall be capable of processing the estimated average daily workload for Facial Recognition Search Requests contained in the row identified as applicable to Facial Recognition Searches in the Average Daily Photo Workload Estimates table.	
SRS3416	The NGI System shall be capable of processing the estimated average daily workload for adding to the UPF via Facial Recognition Search Requests contained in the row identified as applicable to UPF Add in the Average Daily Photo Workload Estimates table.	

Daily and Hourly Photo workload estimates are shown in Table 3.1-4 and Table 3.1-5 respectively per NGI Workloads version 4.1 (preliminary). Workloads and capacities are based on an advance copy of updated requirements received from CJIS. It is assumed that the NGI requirements baseline will be updated to reflect these changes.

Table 3.1-4 Average Daily Photo Workload Estimates

Average Daily	FY2012	FY2013	FY2014	FY2015
Identification Services				
Fingerprint w/Photo	3,417	6,202	14,083	18,784
Information Services				
Photo Retrievals	0	28,059	30,865	33,952
RISC Photo Retrievals	0	0	2,750	3,025
Photo Feature Retrievals	0	1,000	1,400	1,960
SMT Photo Retrievals	0	600	840	1,176
Photo Audit Trail Retrievals	0	30	36	41
Investigative Services				
Facial Recognition Searches	0	100	140	196
UPF Add (via Facial Recognition Search request)	0	6	9	12
SMT Text-Based Searches	0	10	14	20
Photo Text-Based Searches	0	10	14	20

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Average Daily	FY2012	FY2013	FY2014	FY2015
Data Management Services				
Direct Photo Enrollments	0	0	54,795	54,795
Photo Deletions	103	320	423	564

Table 3.1-5 Average Hourly Photo Workload Estimates

Average Hourly	FY2012	FY2013	FY2014	FY2015
Identification Services				
Fingerprint w/Photo	143	260	588	784
Information Services				
Photo Retrievals	0	1,170	1,287	1,415
RISC Photo Retrievals	0	0	115	127
Photo Feature Retrievals	0	42	59	82
SMT Photo Retrievals	0	25	35	49
Photo Audit Trail Retrievals	0	2	2	2
Investigative Services				
Facial Recognition Searches	0	5	6	9
UPF Add (via Facial Recognition Search request)	0	1	1	1
SMT Text-Based Searches	0	1	1	1
Photo Text-Based Searches	0	1	1	1
Data Management Services				
Direct Photo Enrollments	0	0	2,284	2,284
Photo Deletions	5	14	18	24

3.1.3   Capacity Requirements

Cumulative Photo Capacity estimates are shown in Table 3.1-6 per NGI Workloads version 4.1.

Table 3.1-6 Photo Capacity Estimates

YEARLY	FY2012	FY2013	FY2014	FY2015
Criminal Photo Record (Frontal Face)	12,177,404	13,319,470	28,782,332	46,021,052
Civil Photo Record (Frontal Face)	0	1,131,657	2,475,502	4,299,969
Unsolved Photo Record	0	2,190	5,296	9,548
RISC Photo Records	0	149,299	179,159	214,991

YEARLY	FY2012	FY2013	FY2014	FY2015
New Repositories Photo Records (up to 5)	0	0	61,888	214,998
New Repositories			1	2

3.2 ARCHITECTURAL CONTEXT

The architectural description provided in this section applies to the objective NGI system as shown in Figure 3.2-1. Within the NGI Service Oriented Architecture (SOA), the Photo subsystems are expected to provide services for adding photos to a photo Master Repository, adding facial photos to a facial recognition search repository(s), performing Text Based Photo Search Requests and performing Facial Recognition Search Requests. Service transactions will be fulfilled via a messaging system based on the Java Message Services (JMS) protocol. Biometric subsystems will pull work from queues when they have capacity to process them. Multiple instances of the search subsystems may be instantiated, if needed, to meet the workload requirements. NGI will maintain a master repository of photo images and photo biometric templates (feature vectors). The Facial Recognition subsystem components will be given read only access to these repositories to load a local cache of repository templates at startup. After startup, template maintenance transactions made in the master repository will be sent to each affected biometric subsystem.

For this Trade Study, candidates will be evaluated for their ability to fit within this objective architecture and the performance of their Facial Recognition services. Other Photo based service requests such as Text Based Photo Searches will not be performed by the facial recognition system therefore are not included in this Trade Study.

All components of the NGI architecture, including the Photo Subsystem, are expected to be modular in design to provide maximum flexibility in accommodating evolving requirements. In the future, the system will accommodate additional needs derived from business analysis to search other segments of the repository. To support these requirements, the selected biometric solutions must be flexible enough to be appropriately configured, and loaded with designated subsets of the master repository population. The biometric subsystem size will meet an initial workload and repository size and will periodically expand to meet growing needs. Additional capacity allocated on demand from reserve, spare, or other resources helps meet near term peaks in workloads. Modularity and redundancy are also instrumental in providing the high availability of services required by NGI's users. These factors are reflected in the derived requirements presented in the next section and will be important criteria used to evaluate candidate solutions.
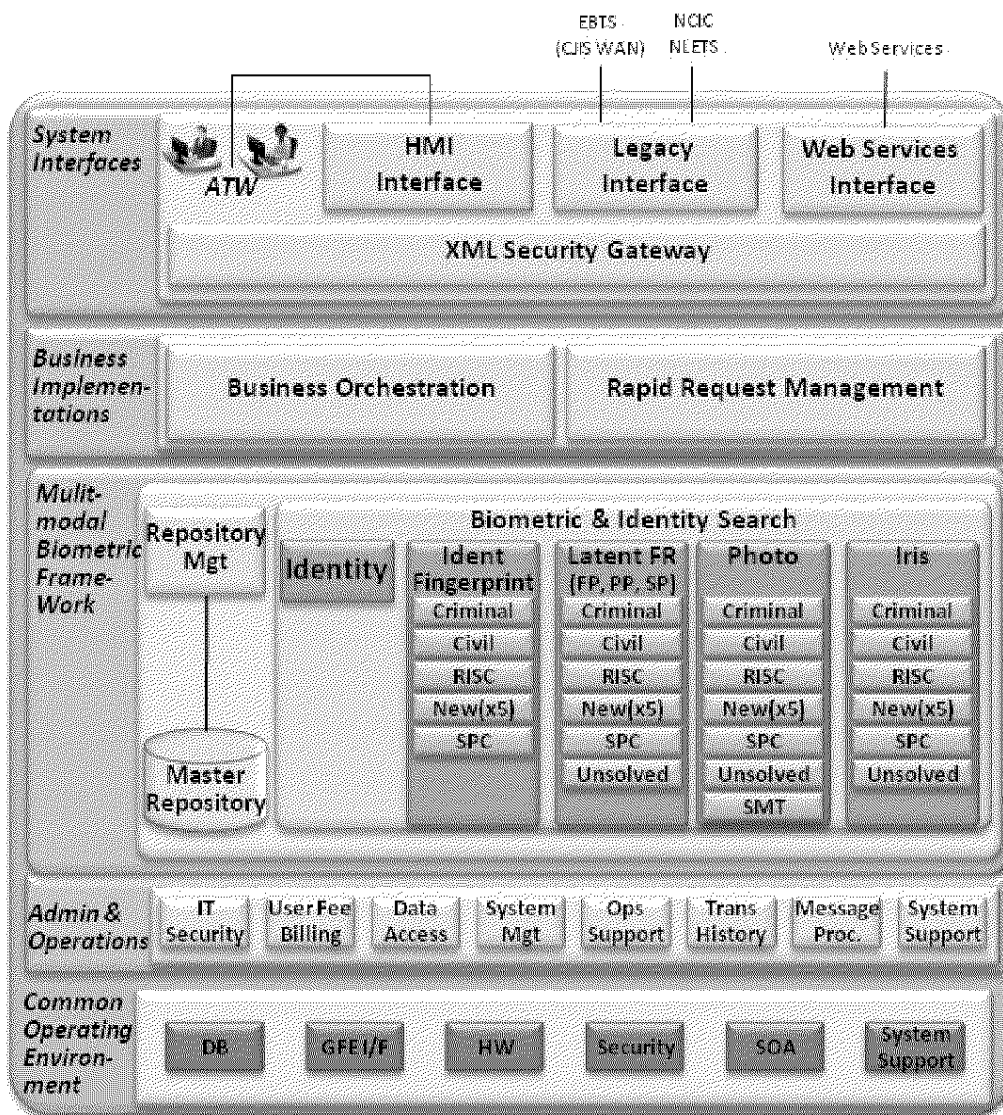
Figure 3.2-1 NGI Architecture

For this Trade Study, software-only solutions will be considered; hardware-based solutions will not be considered due to the new security requirements identified after the completion of the IdFP/RISC trade study. And while the study does not wish to exclude any participant, because the resulting capability is being considered as a biometric search component within NGI, a simple matching algorithm is insufficient. A scalable facial recognition system that includes multi-job management and reporting, configuration settings for thresholding and selectivity, and performance monitoring is best. Thus participants must provide evidence of existing products that have high potential for meeting NGI requirements.

4 STUDY METHODOLOGY

Unlike the first two NGI trade studies that were performed in two phases, a down select followed by in-house performance testing; the study will be performed in a single phase where all vendors participating in the NIST MBE-Still test will be invited to participate. Paper studies of the COTS vendors that are likely to be able to provide a facial recognition solution that will meet the NGI requirements will be performed. The time intensive and costly performance tests of each vendor solution will not be performed in the NGI trade study lab for this study. Instead, the NIST MBE-Still testing will provide the necessary performance metrics.

Lockheed Martin will contact those commercial biometric vendors that have expressed interest in participating in the NIST MBE-Still testing. The vendors will be notified that the NIST MBE-Still test results will be used as part of the NGI facial recognition source selection so if they wish to be considered they should submit their SDK to the NIST test. The schedule found in Section 6 leads to a Request for Proposal sent to each participating vendor. Delivery of the Request for Proposal (RFP) will immediately follow government approval of this Trade Study Plan. A vendor's participation and the results will not be disclosed to the public.

4.1 VENDOR NOTIFICATION

Lockheed Martin will involve only those commercial participants that participate in the NIST MBE-Still evaluation of their facial recognition capability.

The primary requirements to participate in the study are: 1) the participant's performance must have a reasonable expectation of competing against the NGI requirements; 2) the participant must agree that its solution will not contain proprietary hardware and that, if selected as preferred bidder, participant will provide its software source code to Lockheed Martin for security analysis. The vendors will be vetted against these requirements based on past performance, public knowledge, and vendors' responses to the vendor notification letters.

Lockheed Martin Supply Chain Management personnel will contact vendors in the initial list to confirm contact details. A formal letter of Invitation to Participate (ITP) and a description of the trade study will help the vendor finalize their decision to participate. The vendors should start the Non-Disclosure Agreements (NDA) process as soon as they accept the formal ITP. No participant will be told of any other potential participant.

4.2 REQUEST PROPOSAL FROM VENDORS

Each participating vendor will receive an identical RFP that will provide enough detail on the Lockheed Martin NGI architecture and requirements so that they can respond with a proposed NGI solution, along with an associated price proposal. Besides detail on NGI, the RFP will also provide details on the biometric trade study, where the vendors will be expected to propose a configuration based on their proposed NGI solution. The evaluation is structured such that vendors are encouraged to suggest cost effective solutions that exceed the minimum derived performance requirements.

Requested in the RFP response will be an analysis by the vendor to show how their implementation operationally scales to NGI sizing and performance requirements. The vendor's sizing model will also be requested. Also, a firm fixed price proposal will be required with the

response related to the vendor's NGI solution that covers not only product license but also maintenance and support, as well as technical refresh to upgraded versions. The price proposal will include the vendor's licensing approach for their NGI solution as well. Since the selected solution will be installed on NGI hardware, the vendor solution will have to function on blade servers running RedHat Linux. If a database is required, a solution utilizing an Oracle database is preferred. The vendor proposal should include costs associated with migrating their product to the NGI platform. The RFP package will include the final evaluation criteria used for evaluation. Any updates to the evaluation criteria will be reviewed with CJIS prior to the issuance of the final RFP package.

Vendor proposals should show reasonable evidence of the availability of a minimum set of capabilities. Vendors must have the capability to perform both facial image enrollment and facial recognition searches. Facial recognition functionality requires the ability to match a facial image against a repository containing multiple enrollments of a subject's facial image and return a ranked candidate list of potential matches. The vendor must be able to perform facial recognition searches against an unsolved photo repository and nominate potential matches. The vendor must be able to utilize biographic information to filter candidates in the repository. NGI has high availability requirements, so the vendor must have an approach to high availability, failover and transaction persistence.

Because any selected solution must be integrated into a larger system, the solution should exhibit a reasonable level of interoperability. This is addressed in three ways. First the vendor should explain their adherence to existing biometric standards. Second, the willingness of the participant to disclose implementation details as well as the ability to alter the interface will allow for customization and increase desirability of their product. Thirdly, the vendor's inclination to cooperate with making changes to meet NGI requirements will be indicative of a manageable partnership. The evaluations will ill-favor implementations that exhibit a closed architecture, or which use excessive proprietary protocols and data definition.

The participant is to provide a description of their capabilities for facial recognition matching. Vendors will need to describe how the product is used and integrated. If the offering is an existing product whose description is available publicly, that information will be used to analyze its capabilities but the participant will have a chance to provide updated information. Source selection will consider product support information including maintenance and market penetration. If the offering does not exist as a commercial product, a vendor's marketing plans will provide insight into the solution's long term viability. Products that are on track for commercialization usually imply better long term support. The viability of the vendor's product, a prerequisite for the continued support for the offering, is heavily considered in the Source Selection Criteria.

Because the solution will be used within a large scale system, the participants that have experience with developing mature products are preferred. Participant's historical use of their solution within larger scale systems is a consideration. The lack of experience may cause their solution to appear less competitive.

Because of potential bias of a participant's input, independent supporting information they can offer will serve to decrease the risk attached to the selection. Any references the participant can provide to their product having been evaluated by others or existing deployed installments will strengthen their standing. Contact with a participant's existing customers may lend further

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substantiation to product claims and vendor support disposition. Participants will need to provide information on the expected acquisition and integration costs. The participant's experience and viability is a consideration. References for external, independent corroboration of the participant's performance claims will be useful.

Having an existing biometric search product (but not necessarily as a commercial product) that provides system-level facial recognition is favorable. The proposed solution must be a fully operational "system" not a set of algorithms that must be incorporated into a system or a set of SDK's that must be linked into a full system. Because NGI considers the biometric solution to be a component, a scalable, multi-search system is required. At a minimum the implementation must accept multiple searches, perform the searches against a large subject repository, as well as multiple repositories, and produce a list of nominated candidates (or a no candidate result). Also desirable is the capacity to perform simultaneous search execution, to report on job status, to tune for performance (configurable thresholds or other settings), and to report on the performance of the different stages of execution.

Participant implementations must provide candidate nomination, matching scores and quality scores. The ranking and selection of specific candidates must be part of the participant solution. Facial recognition searches against an unsolved photo repository should result in a match/no match declaration.

Miss analysis is a highly desired feature to support investigation of system performance. For NGI, the biometric solution will provide the capability to track a known exemplar (mate) through the search process and report sufficient statistics for an analysis to determine why a search failed to nominate the correct repository mate subject.

Search performance statistics supports system analysis. Solutions that provide timing, including both wait and processing times are desirable.

Evaluation will view favorably solutions that provide simultaneous multi-search operation. While a solution could operate in a sequential manner, the implication this has on throughput scalability and processing complexity in an operational system that will require significant parallel activity will place the vendor at a disadvantage in the source selection. Participant offerings that can use parallel computing platforms in a scalable fashion will have an advantage over those that do not.

Lockheed Martin Supply Chain Management personnel have developed a Source Selection Plan which identifies three evaluation categories: Technical, Management, and Cost. The criteria for the Technical and Management categories must be accurate, unambiguous, verifiable, complete, and appropriate. The reasonableness of anticipated vendor prices is one of the criteria for selection. In order to ensure this price reasonableness, Lockheed Martin will perform a Best And Final Offer (BAFO) prior to selection of a vendor solution. Details, including the timing of the BAFO will be prepared and reviewed with CJIS. CJIS will participate in reviewing the specific evaluation criteria in the Source Selection Plan prior to forming a baseline version of the Source Selection Plan and sending the RFP to prospective vendors. The Source Selection Plan will incorporate reasonable, specific, and measurable evaluation criteria CJIS formulates and recommends.

Lockheed Martin will use the vendor's sizing model along with data collected from the NIST MBE-Still tests to provide several reduced cost options. Each vendor will be required to describe

the search flow differences between what was submitted for the NIST MBE Still testing and their proposed NGI solution. Each vendor will also be asked to provide information on how their solution's accuracy is impacted by larger repository sizes and how they have estimated that impact. The vendors will also be asked to describe image quality metrics their solution generates and how they relate to accuracy. The timing and throughput information collected during the NIST tests will be used to validate the vendor model, then the model will be used to determine the quantity of hardware required to meet the current NGI requirements.

The Source Selection Plan will also include a requirement for a risk assessment which is separate from the evaluation criteria. The solution chosen for NGI will need to support the CJIS effort to make the NGI quality metrics publicly available. At the very minimum, the selected vendor must provide methods for external users to measure the quality of the facial imagery to determine if they will be rejected.

4.3 PERFORMANCE EVALUATION

At the conclusion of the NIST MBE-Still testing, Lockheed Martin will receive the preliminary results for each of the tested COTS SDKs. At a minimum, True Match Rate (TMR) versus Rank data, accuracy versus False Match Rate (FMR) and response time metrics will be provided by NIST. The accuracy results from the NIST MBE-Still testing will be the basis for the trade study accuracy technical evaluation.

The overall "Top 50" accuracy will be used to compare and score the vendors' accuracy. The accuracy achieved by each vendor will be provided to the technical evaluation team and a score computed based on the criteria provided in the Source Selection Plan (SSP).

4.4 FINAL RECOMMENDATION

After the NIST test results are evaluated and summarized and the RFP responses received, the resulting documentation will be provided to the management and technical evaluation teams. The scoring matrix from the evaluations will be presented and a discussion as to the merits and negative aspects of each entry discussed. The intent is to provide CJIS with a recommended vendor for NGI. Lockheed Martin will select the vendor based on the results of the study and submit that selection for approval by CJIS.

After presentation and discussion of the ranked participants and the results thereof, Lockheed Martin will be available to provide any further investigation and explanation of the results of the study. Once CJIS has approved the selected vendor, Lockheed Martin will open discussions with the vendor to determine the best means of integration within the overall NGI system architecture.

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5 RESOURCES

5.1 CONTRACTOR FURNISHED

No contractor furnished equipment or information will be utilized during the execution of the trade study.

5.2 GOVERNMENT FURNISHED

No government furnished equipment or information will be utilized during the execution of the trade study.

6 SCHEDULE

The Facial Recognition Trade Study schedule is detailed in the NGI Integrated Master Schedule (IMS). The high level milestones are shown below in Table 6-1.

Table 6-1: Major Face Trade Study Activities

Activity	Dates
Develop Trade Study Plan (TSP)	
Deliver draft of TSP with SSP	4/29/2010
Customer review	4/30/2010 – 5/13/2010
Incorporate customer comments	5/14/2010 – 5/21/2010
Deliver Final TSP	5/25/2010
Final CJIS Review and Approval	5/25/2010 – 6/09/2010
COTS evaluation	
Deliver informational letter to potential vendors	4/06/2010
Develop RFP	4/30/2010 – 6/14/2010
Vendor response to RFP	6/15/2010 – 7/13/2010
Technical Solution Review & Management Capabilities Review	7/21/2010
Receive NIST MBE-Still test results	5/31/2010
Analyze NIST test results, prepare scoring for source selection	5/31/2010 – 6/18/2010
Source Selection and Final Report	
Source selection activities	7/14/2010 – 8/04/2010
Review test results and complete report	7/20/2010 – 8/31/2010
CJIS review and approval of Trade Study Report	9/01/2010 – 9/29/2010

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7 ACRONYMS

API	Application Programming Interface
BAFO	Best And Final Offer
CDRL	Contract Item Requirements List
CJIS	Criminal Justice Information Services
CMF	Criminal Master File
CONOPS	Concept of Operations
COTS	Commercial off the Shelf
DID	Data Item Description
EBTS	Electronic Biometric Transmission Specification
ECP	Engineering Change Proposal
FBI	Federal Bureau of Investigation
FFP	Firm Fixed Price
FMR	False Match Rate
GFI	Government Furnished Information
ID	Identification
IMS	Integrated Master Schedule
IPS	Interstate Photo System
IPT	Integrated Product Team
ITP	Invitation to Participate
JMS	Java Message Services
MBE	Multiple Biometric Evaluation
NDA	Non-Disclosure Agreement
NDI	Non-Developmental Item
NGI	Next Generation Identification
NIST	National Institute of Standards and Technology
OSI	Open Systems Interconnection
RFP	Request for Proposal
ROC	Receiver Operating Characteristic
ROM	Rough Order of Magnitude
SAN	Storage Area Network
SDK	Software Development Kit
SME	Subject Matter Expert
SOA	Service Oriented Architecture
SOW	Statement of Work
SRS	System Requirements Specification
SSA	Source Selection Authority
SSC	Source Selection Committee
SSP	Source Selection Plan
TMR	True Match Rate
UPF	Unsolved Photo File

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Definitions of Common Terms

Definitions
AFIS (AUTOMATED FINGERPRINT IDENTIFICATION SYSTEM) -- The IAFIS segment that provides: (1) repository maintenance services, such as receipt, storage, and retrieval; (2) powerful search functions which attempt to match submitted fingerprints with fingerprints in the repository; and (3) fingerprint characteristics processing capability to derive unique aspects of fingerprints for storage and matching.
ALGORITHM -- A limited sequence of instructions or steps that tells a computer system how to solve a particular problem.
ALGORITHM ANALYSIS -- Ensures that selected algorithms are correct, appropriate, and stable, and meet all accuracy, timing, and sizing requirements.
AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) -- A nonprofit, privately funded membership organization, founded in 1918, that coordinates the development of U.S. voluntary national standards in both the private and public sectors. It is the U.S. member body to the International Standards Organization and the International Electrotechnical Commission. Information technology standards pertain to the analysis, control, and distribution of information, which includes programming languages; electronic data interchange; telecommunications; and physical properties of diskettes, cartridges, and magnetic tapes.
APPLICATION PROGRAMMING INTERFACE (API) -- Formatting instructions or tools used by an application developer to link and build hardware or software application.
AUDIT TRAIL -- A chronological record of system activities that enables the reconstruction and examination of the sequences of events and/or changes in an event.
AUTOMATED FINGERPRINT IDENTIFICATION SYSTEM (AFIS) -- A highly specialized biometric system that compares a submitted fingerprint record (usually of multiple fingers) to a database of records, to determine the identity of an individual. See also AFIS/FBI and/or IAFIS.
AUTOMATICALLY -- Describes an action that is initiated and executed by hardware and/or software without human intervention. This is commonly referred to as "Lights Out Operation".
BACKGROUND DATA -- Data other than the specific test seed data that exist within a repository or file. These data provide size, depth, or range to the repository as required demonstrating system functionality or performance characteristics. The segment contractors provide these data.
BACKUP -- Consists of on-line maintenance of a subset of the operational repository data from which the full operational repository can be rapidly recovered. Backup devices and media may be co-located in the same facility with the operational devices and media. Backup of repository data is intended to address minor loss events.
BASELINE -- The progressively documented set of functional, performance, and physical characteristics, mutually agreed upon by Government and Contractor, that define the evolving definition of the "to be delivered" contract end item, as well as the project management plan for the project.
BENCHMARK -- A standardized task given to versions of the same device to evaluate their performances against a standard.
BIOMETRICS -- A general term used alternately to describe a characteristic or a process. *As a characteristic:* A measurable biological (anatomical and physiological) and behavioral characteristic that can be used for automated recognition. *As a process:* Automated methods of recognizing an individual based on measurable biological (anatomical and physiological) and behavioral characteristics.
CODE -- A set of machine symbols that represents data or instructions.
COMMERCIAL OFF-THE-SHELF (COTS) -- Hardware and software that is in current production and has been purchased by and delivered to customers as of the date of proposal submission. At least 25 items of the specific hardware model or software version that the Contractor proposes must have been purchased and delivered, to be categorized as COTS. Items used for testing are not considered purchased and delivered.
CONFIGURATION -- A particular system of interrelated components, such as a computer system or communications network.
CONTRACT DATA REQUIREMENTS LIST (CDRL) -- A comprehensive listing of required data items (deliverables) for a particular contract, including instructions detailing copy requirements, assignment of Office of Primary Responsibility (OPR), and delivery instructions.
CONTRACTOR -- Any organization or individual under contract or tasking agreement with a procuring agency.
DATA -- Technically, raw facts and figures that are processed into information.
DOCUMENTATION -- The comprehensive written description of computer software in various formats and levels of detail that clearly defines its content, composition, design, performance, testing, and use.
ELECTRONIC BIOMETRIC TRANSMISSION SPECIFICATION (EBTS) -- An FBI-published specification for electronically encoding and transmitting biometric images, identification, and data between federal, state, local users, and the FBI which specify file, record content, format and data codes.

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Definitions

EXTREME VALUE STATISTICS (EVS) – a statistical analysis methodology concerned with modeling the distribution of random variants at extreme ends of a distribution that deviate from the mean probability distributions. Used to extrapolate top-N results for larger size repositories.

FORMAL ANALYSIS -- Rigorous mathematical techniques to analyze the algorithms. The algorithms may be analyzed for numerical properties, efficiency, and/or correctness.

INFORMATION -- The summarization of data, which was accumulated from raw facts and figures that are processed into information, such as summaries and totals.

INTERCHANGE FORMAT -- The representation of compressed image data for exchange between application environments.

INTERCONNECTED SYSTEM -- An approach in which the network is treated as an interconnection of separately created, managed, and accredited computer systems.

INTERFACE -- The point at which two systems or two parts of one system interconnect. An interface includes the type and functions of the interfacing circuits, such as impedance and signal levels and forms, and the nature and coding of the information exchanged.

INTERNATIONAL STANDARDS ORGANIZATION (ISO) -- An organization that sets international standards, founded in 1946 and headquartered in Geneva. This organization deals with all fields except electrical and electronics. ANSI is the U.S. member body to the ISO.

INTEROPERABILITY -- The ability of systems developed by different vendors to communicate meaningfully (i.e., understand and properly respond to information and/or commands passed between systems) and enable users of different applications on these systems to exchange information.

LIFE-CYCLE COST -- Costs of development, operation, and maintenance over the life of a project or system.

LIFE-CYCLE COST ESTIMATE -- A financial estimate of the life-cycle cost of a project or system.

LINK LAYER -- The layer in the OSI model regarding transmission of data between network nodes.

LIVE DATA -- Data contained within or extracted from an operational, on-line system.

LOCAL AREA NETWORK (LAN) -- A means of interconnecting microcomputers and minicomputers within a limited geographical area that allows for sharing of resources, communications, and files.

MEASUREMENT -- Quantitative evaluation.

MEGABYTES -- 1,000,000 or 1,048,576 bytes or characters.

MEGAHERTZ -- One million cycles per second.

MENU -- A list of displayed options from which an operator can select the next action.

MESSAGE -- An ordered series of characters, words, or symbols intended to convey information, and whose content, which generally contain a heading, text, and an end-of-message symbol, are delivered as an entity.

MICROSECOND -- One-millionth of a second.

MILLISECOND -- One-thousandth of a second.

MODEL -- A mathematical representation of a device or process that is used for analysis and planning. Models are sets of equations that represent a condition or set of operations in the real world. It differs from a list of descriptions; in that, it also describes the interrelationships of the components.

NATIONAL INSTITUTE of STANDARDS and TECHNOLOGY (NIST) -- Formerly known as the National Bureau of Standards, this division of the U.S. Department of Commerce ensures standardization in non-defense government agencies.

NETWORK LAYER -- In the OSI model, the layer that provides the functions and procedures used to transfer data from the transport layer, to and through the network.

NON-DEVELOPMENTAL ITEM -- An item that does not require development, e.g., COTS products or privately developed materials.

OFF-THE-SHELF -- Items that are immediately accessible from stock, and need not be newly purchased or manufactured.

OPEN ARCHITECTURE -- A system in which the specifications are made public in order to encourage third-party vendors to develop add-on products for it.

OPEN STANDARDS -- A standard that is not proprietary. The standard is not owned or controlled by a limited group or company requiring permission or compensation for use. A standard that is widely accepted by the technology community.

OPEN SYSTEM INTERCONNECT -- A seven layer hierarchical reference structure developed by the ISO for defining, specifying, and relating communication protocols and for standardizing communication between systems manufactured by different vendors.

PORTABILITY -- The ability to run a given application on different systems with minimal modification.

PORTABLE OPERATING SYSTEM INTERFACE (POSIX) -- A proposed standard that defines the language interface between application programs and UNIX or a UNIX-like operating system.

Definitions

QUEUE -- A list of waiting items indicating the items in the system are waiting to be processed and the order in which they should be processed.

RECORD -- A group of related fields that are used to store data about a subject (master record) or activity (transaction record). A collection of records makes up a file. Master records contain permanent data.

RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS) -- Most common form of database where files pertain to one another in at least one common field.

REPEATABILITY -- Test results are consistent; identical inputs result in repeatable outputs.

REPOSITORY -- A central location where the data is stored and maintained. This can be multiple databases or files located for distribution over a network.

RESPONSE TIME -- The time between the user pressing the enter/return key and the appearance of the first character of the response on the workstation display.

SOFTWARE -- Instructions for the computer.

SOFTWARE DESIGN DESCRIPTION (SDD) -- A representation of software created to aid in analysis, planning, implementation, and decision-making. The software design description is used as a medium for communicating software design information and may be thought of as a blueprint or model of the system.

SOFTWARE DEVELOPMENT --- The engineering process and effort that results in software, encompassing the span of time from initiation of the contracted effort through delivery to and acceptance by the procuring agency.

SOFTWARE REQUIREMENTS SPECIFICATION (SRS) -- Documentation of the essential requirements (functions, performance, design constraints, and attributes) of the software and its external interfaces.

SOFTWARE SPECIFICATION REVIEW (SSR) -- A review to determine the adequacy of the software requirements specification.

SOFTWARE VERIFICATION AND VALIDATION PLAN -- A plan for the conduct of software verification and validation.

SOURCE CODE -- A program in its original form as written by the programmer. Source code is not executable by the computer directly. It must be converted into machine language by the compilers, assemblers, and interpreters.

SPECIAL TEST DATA -- Test data based on input values likely to require special handling by the program.

SYSTEM -- The total accumulation of interconnected hardware and software; to include a single central processing unit or multiple central processing units linked by collocated processor to processor communications, placed in separate processing centers, and the associated peripheral components including those peripheral components located at field sites.

WIDE AREA NETWORK (WAN) -- A network that interconnects geographical boundaries, such as cities and states, generally a distance of 50 miles or greater.

WORKSTATION -- (1) A high-performance, single user micro or minicomputer that has been specialized for graphics, computer-aided design, computer-aided engineering or scientific applications. (2) In a LAN, a personal computer that serves a single user in contrast with a file server that serves all the users in the network. (3) Any terminal or computer.

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ATTACHMENT A: SOURCE SELECTION PLAN (SSP)

1 INTRODUCTION

Lockheed Martin is the prime contractor for the FBI's Next Generation Identification (NGI) program. In support of that program, Lockheed Martin is required to conduct trade studies and select vendors for biometric modalities. These selections, which are the responsibility of Lockheed Martin, will be documented in the NGI Trade Study Report CDRL. Upon approval of the Trade Study Report, an ECP will be developed by Lockheed Martin to add the biometric scope to the NGI program. Upon acceptance of Lockheed Martin's proposal by CJIS, Lockheed Martin will establish a contract with the selected vendor. The FBI does not play a direct role in the execution of this source selection activity.

This document defines the overall plan which is utilized by Lockheed Martin for selection of a supplier to provide the Facial Recognition functionally required for the NGI contract. This document defines the source selection organization and responsibilities, the source selection process and the evaluation criteria in order to ensure an objective and coordinated source selection. The SSP is not provided to vendors because it contains unannounced management/quality, technical weights, as well as the cost evaluation methodology and the evaluation process (strengths/weaknesses, risk, and those discriminators determined by the comparison of the proposals).

1.1 PROGRAM MISSION

The NGI mission is as follows:

- Protect the United States from terrorist attack, foreign intelligence operations and espionage

- Support federal, state, local and international partners in their efforts to prevent or reduce crime and violence

- Upgrade technology to successfully support the FBI's missions

The NGI system will feature multiple biometrics modalities, which add new layers of certainty into the identification process. The team has designed the solution to provide immediate, short-term gains for the customer, while still ensuring flexibility to incorporate new, proven biometric modalities in the future.

1.2 TYPE OF CONTRACT

Lockheed Martin anticipates issuing a Firm Fixed Price (FFP) type contract to the successful bidder or bidders.

1.3 BIDDER'S LIST

The following companies are being solicited for trade study participation:

b4

b4
b6
b7C

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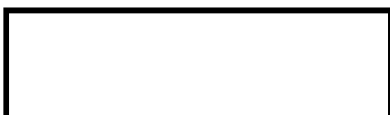
b4
b6
b7C

1.4 BEST VALUE

This formal plan selects a source on a competitive basis. It establishes the appropriate emphasis on requirements and process (Section 4) so as to select the vendor that will provide the "Best Value" to Lockheed Martin and the NGI Program.
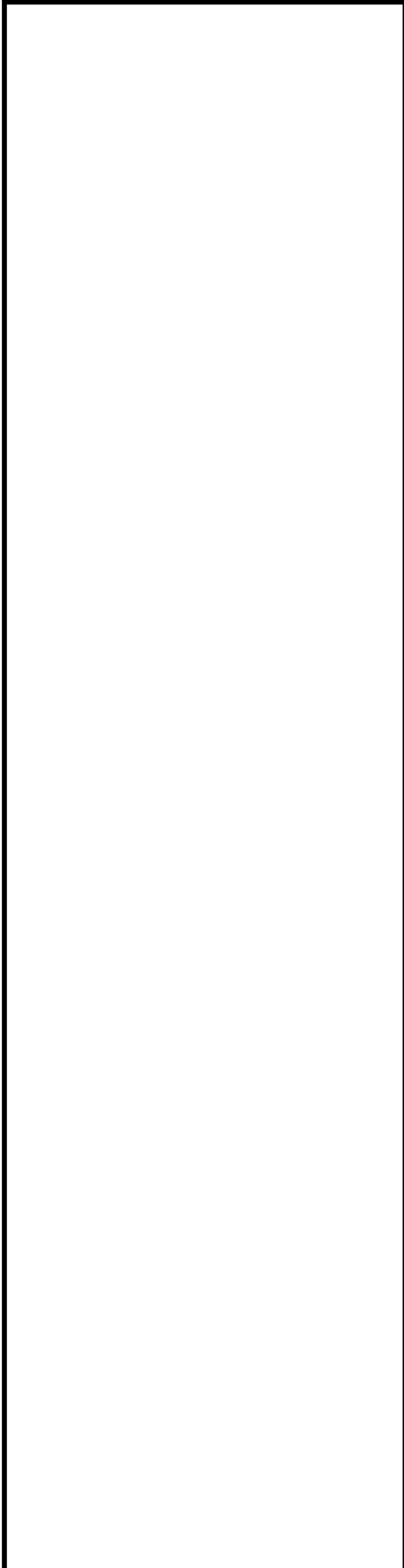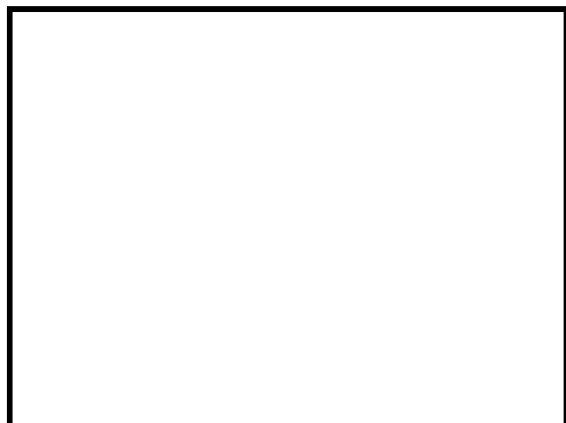
Best Value will be determined by the Source Selection Committee (paragraph 3.2) through a relationship of performance and cost. Evaluation Teams (paragraph 3.3) will assess supplier proposals against performance evaluation criteria, resulting in an overall weighted performance score (paragraph 4.4) and a "Total Evaluated Cost". Based on the team's evaluations, the Source Selection Committee will make a recommendation (paragraph 4.5). This recommendation will be presented to the Source Selection Authority (Paragraph 3.1) for approval.

Performance will be assessed (Appendix A, B) as a combination of results obtained through NIST evaluation of vendor offerings and proposal response alignment to the Statement of Work. In general, scoring of each parameter will start with a comparison to the associated requirement, then by a ranking between each of the offerings. Differences in scoring between offerings will be documented based on the relative strengths and weaknesses of each offering.

Cost will be evaluated (Appendix C) by analyzing initial acquisition cost and total life-cycle cost for hardware and software. The Cost Evaluation Team will also calculate a total cost of ownership for the NGI customer based on data provided by each bidder as well as other factors not provided by the bidder. The total life-cycle cost will be used as the cost basis factor in identifying the best value selection.

1.5 REQUEST FOR PROPOSAL

An RFP will be released to prospective bidders for the purpose of soliciting the information required to complete this source selection.

The RFP will be provided to the FBI/CJIS in support of the prime SOW requirement to conduct interim reviews and a final review to inform the Government regarding status, plans, issues, and interim and final results

2 TRADE STUDY SCHEDULE

Activity	Dates
Develop Trade Study Plan (TSP)	
Deliver draft of TSP with SSP	4/29/2010
Customer review	4/30/2010 – 5/13/2010
Incorporate customer comments	5/14/2010 – 5/21/2010
Deliver Final TSP	5/25/2010
Final CJIS Review and Approval	5/25/2010 – 6/09/2010
COTS evaluation	
Deliver informational letter to potential vendors	4/06/2010
Develop RFP	4/30/2010 – 6/14/2010
Vendor response to RFP	6/15/2010 – 7/13/2010
Technical Solution Review & Management Capabilities Review	7/21/2010
Receive NIST MBE-Still test results	5/31/2010
Analyze NIST test results, prepare scoring for source selection	5/31/2010 – 6/18/2010
Source Selection and Final Report	
Source selection activities	7/14/2010 – 8/04/2010
Review test results and complete report	7/20/2010 – 8/31/2010
CJIS review and approval of Trade Study Report	9/01/2010 – 9/29/2010

3 SOURCE SELECTION ORGANIZATION

The evaluation, selection, and executive management review of the source selection process is accomplished by a Source Selection Organization (SSO). The positions in this organization are listed in this section and show the relationships and authority in completing the selection process.

The Source Selection Authority (SSA) Co-Chairs have been designated for the Source Selection to:

- Provide source selection focus

- Assure that overall program objectives are met, and;

- Assure that proper procurement procedures are observed in all aspects of the selection process

- Provide the primary responsibility for compliance with LM and Government procurement policies, procedures and regulations

- Establish responsibility for approving the recommended solution and rationale for that solution.

The evaluation function is accomplished by Technical, Management, Quality and Cost evaluation teams, who are responsible for the actual scoring of each vendor's proposal and selection recommendations to the Source Selection Committee (SSC). The SSC, based on the evaluation scores and recommendations are subsequently presented to the SSA.

3.1 SOURCE SELECTION AUTHORITY

The SSA will review and approve the overall SSP including all appendices, and subsequently audit and approve the Source Selection recommendation to assure the objectivity, accuracy, and overall validity of the recommendation.

b6
b7C

Name	Co-Chairs
	Engineering Director
	Global Supply Chain Management

3.2 SOURCE SELECTION COMMITTEE

The Source Selection Committee (SSC) is comprised solely of LM employees and is responsible for the objectivity, accuracy and excellence of the overall evaluation. The committee will review and approve the plan, evaluation criteria, and scoring weights.

Upon completion of the teams' evaluations, the committee will review and approve the evaluation teams' recommendation. The evaluation team leads will become members of the SSC after they have completed their evaluation and the evaluation is accepted by the committee. After all of the team evaluations have been completed, the SSC will develop a selection recommendation based upon the evaluation team ratings, program risks and top-level weighting factors. The SSC will present this recommendation to the SSA for review and approval.

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Name		Committee	b6
[ ] Committee Lead)		Director, Global Technical Operations (GTO)	b7C
		Engineering	
		Sourcing Manager	
		GTO Sr. Manager	
		Quality Assurance Sr. Manager	

3.3 EVALUATION TEAMS

Each of the evaluation teams is responsible for the evaluation and scoring of their specific sections of the bidders' proposals. Each evaluation team will consist of specialists representing functional interests pertinent to the specific proposal items to be evaluated by the team.

Each evaluation Team Lead is responsible for the objectivity, level of detail, and accuracy of the evaluation accomplished by his/her team. He/she will collect data based on the evaluation criteria, respective weights, evaluation methods, and scoring methodologies in this SSP. He/she will assign qualified people to evaluate the specific areas, coordinate and supervise their evaluation activity, and review their evaluations for completeness and accuracy. Upon completion of the evaluation, he/she will then compile the results and risk identification and present them to the SSC Co-Chairs who will in turn approve and present the findings to the SSA.

Team Lead	Review Team	b6
	Technical	b7C
	Management	
	Cost	

3.3.1 Management Evaluation Team

The Management Evaluation Team is responsible for the evaluation of the bidders' data as provided relative to the Lockheed Martin RFP. The specific evaluation criteria and weighting factors are provided in Management Evaluation Criteria, Appendix A.

The Management Evaluation Team will rely on Subject Matter Experts in the Security functional area for evaluation of Security Plans and in the Contracts functional area for evaluation of the and Organizational Conflict of Interest (OCI) plans.

Evaluator	Review Team	b6
	GTO, Evaluation Team Lead	b7C
TBD	Subcontract Program Management	
	Quality Assurance	
	Major Subcontract Administrator	
	Security SME	
TBD	OCI SME	
	CM SME	

3.3.2 Technical Performance Evaluation Team

The Technical Evaluation Team is responsible for the evaluation of the bidders' data provided relative to the Lockheed Martin RFP. The specific evaluation criteria and weighting factors are provided in the Technical Performance Evaluation Criteria, Appendix B.

Evaluator	Review Team
	Biometric Study IPT, Evaluation Team Lead
	Engineering
TBD	Engineering
TBD	Engineering

b6
b7C

3.3.3 Cost Evaluation Team

The Cost Evaluation Team is responsible for the evaluation of the data provided by the bidders, relative to the Lockheed Martin RFP. The general evaluation criteria are provided in the Cost Evaluation Criteria, Appendix C.

Evaluator	Review Team
(Team Lead)	Subcontract Program Management
	Project Office, Business Operations Manager
	Subcontract Administrator
TBD	Subcontract Program Management
	Engineering Manager

b6
b7C

4 SOURCE SELECTION PROCESS

The source selection process will consist of a series of discrete steps that will allow management control and visibility throughout the process. These steps, in the order of their occurrence, are described below.

4.1 SOURCE SELECTION PREPARATION

Prior to the distribution and review of the bidders' proposals all source selection preparations will be completed.

- The SSP will be completed and approved by the SSC and SSA.

- The Source Selection Organization is established and qualified personnel are assigned to evaluation teams.

- The evaluation criteria and scoring weights for all areas of the evaluation are developed, approved by the SSC, and frozen.

- All personnel involved in the proposal evaluation will be briefed on the evaluation procedures, evaluation criteria, data control, and responsibilities. Each individual will sign the non-disclosure certification statement in Appendix D - Certificate of Non-Disclosure.

4.2 MAJOR SUBCONTRACT ADMINISTRATION RECEIPT AND CONTROL OF PROPOSAL DATA

When the bidders' proposals are received, they will be logged, time stamped, and assessed for completeness.

The proposals, once through the receiving process, will be distributed to the personnel assigned to the evaluation and source selection. Each individual will acknowledge their receipt of each proposal package, and confirm their understanding of proper proposal handling. At the completion of the source selection process, evaluators will be instructed to destroy all proposal copies.

4.3 PROPOSAL REVIEW

The members of the various evaluation teams will conduct a detailed review of the proposal sections assigned to them for evaluation. Any proposal clarifications requested will be formally coordinated through the Subcontract Administrator.

4.4 TECHNICAL SOLUTION REVIEW AND MANAGEMENT CAPABILITIES REVIEW

In support of the scoring and risk assessment activities each of the evaluation teams is undertaking, a face-to-face Technical Solution Review and Management Capabilities Review will be conducted with each of the bidders. The purpose of these reviews is to allow the

evaluators additional insight into the bidders' offerings prior to setting their final scores and making their final risk assessments. In these reviews, the evaluation team members will ask for substantiation of claims made in proposals and will probe at perceived risk areas, with specific focus on product plans, product scalability, bidders' workload, new business efforts, and staffing at the LOB level that would be working the NGI solution.

4.5   EVALUATION AND SCORING

The technical and management evaluation teams will conduct a thorough evaluation of the sections of the proposal for which it has been assigned evaluation responsibility.

Detailed evaluation sheets (See Appendices A, and B) will be completed by each evaluator for their respective assigned area(s) of review. These sheets will include the evaluation criteria for the specific section of the proposal being evaluated, a space for scoring the evaluation criteria and a space to document the rationale for the score assigned. The rationale shall include any deficiencies. All evaluation committee members will rate the bidders' proposals in the relevant evaluation areas. See Appendix C for a description of the cost evaluation methodology.

Deviations or alternate proposals will not be accepted or evaluated.

4.5.1   Numeric Rating for Evaluations

The following scoring methodology shall be used by the evaluators in conducting the proposal evaluations.

Score	Description
4.1 – 5.0	EXCEPTIONAL - Exceeds specific performance or capability with additional features that may benefit the NGI Program; high probability of success; no significant weakness.
2.6 – 4.0	ACCEPTABLE – Satisfies fully functional and performance requirements, meets evaluation criteria; good probability of success; any weakness can be readily corrected.
1.1 – 2.5	MARGINAL - Fails to satisfy the evaluation criteria and technical requirements; Low probability of success; significant deficiencies but correctable.
0 – 1.0	UNACCEPTABLE - Fails to meet functional and performance requirements; needs a major revision to proposal to make it correct. This rating also includes bidder's overt decision to be non-compliant.

4.6   RISK ASSESSMENT

Risk assessment analysis serves to assess and evaluate potential risks to Lockheed Martin associated with the selection of each bidder's proposal for satisfying the RFP requirements, life-cycle cost and schedule. This risk evaluation will identify and/or review risks adherent to Lockheed Martin within each bidder's proposal. For each risk identified, an overall objective rating describing the risk inherent to each bidder's proposal will be assigned, as follows:

High Risk: Likely to cause significant, serious disruption of work schedule, quality problem, increase in cost, or degradation of work performance even with special contractor emphasis.

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Moderate Risk: Can potentially cause some disruption of work schedule, increase in cost, quality problems, or degradation of work performance. However, special contractor emphasis will probably be able to overcome difficulties.

Low Risk: Has little potential to cause disruption of work schedule, increase in cost, or degradation of work performance. Normal contractor effort will probably be able to overcome difficulties.

In support of this approach to risk assessment, each evaluation team member is required to identify and categorize risk they perceive in the each bidder's proposal. Each moderate or high risk will be evaluated for anticipated program cost impact. That cost impact will be incorporated into the bidder's evaluated cost.

In support of the risk assessment, data for each bidder will be obtained from Dun & Bradstreet® and used to assess the performance and business viability risks associated with the bidder. This assessment may result in disqualification of a bidder or identification of a risk which must be mitigated, should the bidder be selected.

4.7 SOURCE SELECTION RECOMMENDATION

After resolving areas of wide divergence in evaluation team members' scoring and summarizing the results, each evaluation team lead will present the evaluation team results to the SSC. The SSC will validate the findings of the evaluation teams and approve the evaluation data packages for each evaluation team. The SSC will then integrate the evaluation team's scoring results into final scores for each proposal in accordance with the high-level criteria and weights identified in the following Appendices. This final evaluation will be the basis for the development of source selection recommendations by the SSC.

The SSC shall make a selection recommendation based on the following:

- Management Volume   30%
- Technical Volume   70%
- Cost   Evaluated separately, not weighted
- Security   Pass/Fail
- Organizational Conflict of Interest (OCI) Pass/Fail

The SSC shall prepare and carry forward the recommended source to the SSA.

5 EVALUATION CRITERIA

The evaluation criteria, developed by each evaluation team and approved by the SSC, are contained in:

- Appendix A – Management Evaluation Criteria (includes Quality criteria and evaluation)
- Appendix B – Technical Performance Evaluation Criteria
- Appendix C – Cost Evaluation Criteria

These criteria will be utilized and scored by the evaluators during the evaluation of the bidder's proposals.

In the unlikely event that the evaluation scoring of the Technical and Management Criteria results in two or more suppliers having the same numeric score, the supplier with the highest technical score shall rank above the others. This scoring is independent of the Cost Evaluation.

APPENDIX A: MANAGEMENT EVALUATION CRITERIA (30%)

Facial Recognition Evaluation Worksheet

Criteria	Satisfies Criteria (Y/N)	Criteria Weight		Bidder Score	Bidder's Weighted Score	Comments
Security		P/F				Does the bidder understand and apply FBI information and physical security requirements? Full compliance with FBI security requirements is a prerequisite for award.
Organizational Conflict of Interest (OCI)		P/F				Does the bidder understand and apply FBI OCI requirements? Full compliance with FBI OCI requirements is a prerequisite for award.
Risk Based Assessment Tool (RBAT)		60%			0.00	See Section A.1 below for a description of the use of RBAT.
Describe your Research and Development spending (in dollars) on this product for the past five years and planned spending for the next five years.		10%			0.00	
Past Performance		15%			0.00	Based on repository size for largest fielded facial recognition system. Scoring: Under 100,000 – 0 points Between 100,000 and 500,000 subjects – 1 point Between 500,000 and 1 million – 2 points Between 1 million and 3 million – 3 points Between 3 million and 7 million – 4 points Greater than 7 million – 5 points
Support for operational systems: Approach to avoiding and resolving defects in operational systems.		10%			0.00	Assess the robustness and completeness of the following: 1) the vendor's approach to avoiding defects in fielded systems, 2) the vendor's approach to analyzing and resolving failures in fielded systems when they occur.

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| Long Term Agreement | | 5% | | | 0.00 | To what extent does the Offeror's approach to Long Term Agreements support Lockheed Martin cost control? To what extent does the Offeror's approach to Long Term Agreements support NGI product and services needs? To what extent do the Offeror's Long Term Agreements support NGI and FBI short-term and long-term needs? To what extent do the initial Long Term Agreements provide the flexibility needed to support both the current and future system configurations? |
| | | 100% | | TOTAL | **0.00** | |

Bidder Strengths	Bidder Weaknesses	Comments

Total Weighted Management Score – Facial Recognition	0.00

A.1 RISK BASED ASSESSMENT TOOL (RBAT)

The typical objective of performing a subcontractor Risk-Based Assessment is to evaluate bidder risks with regards to their ability and readiness to successfully perform the contracted work. The Risk Based Assessment Tool (RBAT) provides a consistent process and comprehensive tool suite that easily allows Lockheed Martin to perform a bidder assessment. For this Trade Study however, rather than using the tool to perform an evaluation of risk, Lockheed Martin will evaluate the maturity, quality, and completeness of the assessment areas contained in the tool as part of its Management Evaluation. The output of the assessment is an overall score based on an assessment in the following areas:

- Requirements Management
- Project Monitor and Control
- Supplier Agreement Management
- Measurement and Analysis
- Process and Product QA
- Configuration Management
- Technical Solution
- Validation and Verification
- Organizational Training
- Integrated Project Management
- Risk Management
- Production Integration

The overall RBAT score, which is expressed as 0% to 100%, is based on the scoring of each of the elements above. Each question within the above areas is equally weighted and is scored on the basis of non-compliant, 0 points, partially compliant, 3 points, fully compliant, 5 points. The elements to be considered in each response are documented in the RBAT assessment spreadsheet. The final percent score from the tool will be multiplied by the 5 possible points for that evaluation element. (100% RBAT score = 5 total points, 90% RBAT Score = 4.5 points, etc). This value will represent 60% of the total Management Evaluation Criteria score.

The bidder shall provide a response to each question within each area of attachment J-10. The bidder shall limit each response to 200 words. Responses shall be consistent with overarching RFP instructions. Lockheed Martin may use responses to prepare for face to face assessment of identified areas, conducted during live oral sessions. During these sessions the bidder may be asked to provide objective evidence in each area. Assessment areas that are covered via other RFP elements (Quality Assurance Plan, Risk Management Plan and Configuration Management Plan) will be responded to by the Subcontractor via the corresponding RFP element and will be then scored in the RBAT tool by the evaluation team.

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An initial RBAT score will be determined based on the RFP response. LM intends to conduct live oral sessions with bidders and adjust the RBAT score based on clarifications or additional information received during the live orals. The Pre-Assessment Workbook which the subcontractor will complete as part of their RFP response and the RBAT tool the management evaluation team will use to evaluate the bidder's response are provided as attachments to this SSP.

APPENDIX B: TECHNICAL PERFORMANCE EVALUATION CRITERIA (70%)

Facial Recognition Evaluation Worksheet

Criteria	Satisfies Criteria (Y/N)	Criteria Weight		Bidder Score	Bidder's Weighted Score	Comments
Facial Recognition Accuracy (100% empirical from NIST MBE-Still test results)		70%			0.00	Top 50 accuracy from the NIST MBE-Still large scale 1:N test (for values which fall within the ranges shown here, linear interpolation will be used to determine the accuracy score): 65% or less - score = 0 70% - score = 1.0 75% - score = 2.0 80% - score = 3.0 85% - score = 4.0 90% - score = 5.0
Redundancy / Modularity / Scalability (objective analysis of vendor RFP response)		12%			0.00	At a minimum, the vendor solution must be able to continue processing (completing all transaction types) when a single server fails. The vendor solution must be able to be scaled to add servers with minor re-configuration. A solution that allows all parallel processing strings to continue completing transactions when a single server fails is highly desirable.
Technical roadmap (objective analysis of vendor RFP response)		12%			0.00	Rate vendors based on their continuing history of accuracy improvements as well as their research plans to further improve accuracy. Specific improvement plans should be given more credence than generic research goals. Since the trend for the quality of data received by the customer is lower and lower quality, specific research and development plans for low quality submission accuracy improvement is highly desirable.

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Configuration and Transaction Control/Status (objective analysis of vendor RFP response)		6%			0.00	At a minimum, the vendor solution must provide the capability to adjust their solution's matching parameters. Those parameters must take effect without restarting the system. The vendor solution must be able to restart transactions or guarantee transaction completion should a failure occur. Timing data collection allows better modeling of performance so is a highly desirable feature. Other control and monitoring features are of less importance.
		100%		TOTAL	**0.00**	

Bidder Strengths	Bidder Weaknesses	Comments

Total Weighted Technical Score – Facial Recognition	**0.00**

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APPENDIX C: COST EVALUATION CRITERIA

The pricing information Lockheed Martin will receive in response to the issuing an "RFP" for a "firm fixed price quote" will be evaluated as follows:

Total lifecycle cost will be developed for each vendor solution. Total lifecycle cost will include the following:

- From the vendor proposal:
  - Pricing for vendor solution elements, including software and maintenance
- From Lockheed Martin estimates:
  - Hardware and Software costs
  - Hardware purchases and maintenance, including any required adjustments to vendor hardware counts from above
  - Software licenses, maintenance, and technical installation support for any software not provided by the vendor
  - Technology refresh (re-capitalization)
  - Integration effort
  - Initial customization and integration
  - Customization and integration associated with product upgrades
  - Data migration
  - System Development
  - Training Development
- CJIS direct costs of ownership (Facilities, Operations), based on CJIS inputs or Lockheed Martin estimates
  - Facility Costs
  - Personnel Costs (User Staffing & Training, System Administrators)

An estimated cost will be developed for moderate and high risks associated with each bid. The total evaluated cost will then be developed, which incorporates based on the total lifecycle cost, adjusted, as appropriate, based on the risk estimates.

Cost will not be a weighted parameter

The source selection committee will be presented the overall score and the total evaluated cost for each vendor.

If the highest evaluated score is not the lowest evaluated cost, then one or more cost/technical tradeoffs will be required to evaluate the additional benefit associated with the higher cost. These tradeoffs will be used as the basis for the selection.

APPENDIX D: CERTIFICATE OF NON-DISCLOSURE

ATTACHMENT E
CERTIFICATE OF NON-DISCLOSURE
NGI SOURCE SELECTION PLAN

THE UNDERSIGNED ACKNOWLEDGES HIS/HER OBLIGATION NOT TO DISCLOSE INFORMATION RECEIVED FROM BIDDERS DURING THE SUBCONTRACTOR SOURCE SELECTION PROCESS, INCLUDING INFORMATION RECEIVED DURING THE PRELIMINARY INTERVIEW PROCESS, TO ANY PERSON NOT HAVING A NEED TO KNOW. THIS CONSTRAINT INVOLVES BOTH WRITTEN AND VERBAL TECHNICAL, QUALITY, MANAGEMENT, AND COST DATA, REGARDLESS OF NATIONAL SECURITY CLASSIFICATIONS AND/OR OTHER PROPRIETARY LEGENDS. THE UNDERSIGNED FURTHER ACKNOWLEDGES HIS/HER OBLIGATIONS NOT TO DISCLOSE TO ANY PERSON NOT HAVING A NEED TO KNOW, THE EVALUATION PROCEDURES, CRITERIA, SCORING AND WEIGHTING STANDARDS UNLESS SPECIFICALLY AUTHORIZED BY MANAGEMENT.

THE UNDERSIGNED FURTHER CERTIFIES THAT, WITHIN THE LAST TWELVE (12) MONTHS, HE/SHE HAS READ AND SIGNED A CERTIFICATION OF COMPLIANCE WITH THE LOCKHEED MARTIN CODE OF ETHICS AND BUSINESS CONDUCT.

_____

SIGNATURE

_____

PRINTED NAME

_____

DATE

List of proposals provided to reviewer:

Company Name: