SUBJECT: **Space Network Access System (SNAS) System Requirements Review**

DATE: **July 8, 2003**

LOCATION: **Goddard Space Flight Center (GSFC), Building 12, Room E231 (Overflow in Building 12, Room N112)**

TIME CONVENED: **1:00 p.m. EST** TIME ADJOURNED: **5:00 p.m. EST**

ATTENDANCE

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I. INTRODUCTION

Mr. Joe Stevens (NASA/GSFC-Code 452) convened the July 8, 2003, Space Network Access System (SNAS) System Requirements Review (SRR). Mr. Stevens welcomed attendees and noted that he has been assigned as the Product Development Lead for SNAS. Mr. Stevens stated that today's presentation would cover the work that has been accomplished over the last 6 to 7 months in interviewing customers and gathering requirements to put together a usable access tool for using SN services.

Mr. Stevens stated that the purpose of the SNAS SRR is to conduct an independent peer review of the SNAS Requirements and Operations Concept. Over the course of the requirements analysis phase, requirements have been surveyed in the SN Web Services Interface (SWSI) requirements document and the User Planning System (UPS) requirements document and merged into the existing SNAS requirements document. Inputs and requirements have also been received from SN customers. Existing SNAS documentation is currently available on the SNAS Web site at http://snas.gsfc.nasa.gov. The documentation is still in draft form, and inputs to the documents are encouraged.

II. SYSTEM DESCRIPTION

Mr. Earl Bartlett (ITT Industries) has been the Task Leader for the CSOC SODA 44 task that the SNAS work has been performed under. Mr. Bartlett stated that the team includes Denise Gilliland (ITT), Trish Gravatt (ITT), Howard Michelsen (CSC), and others.

Mr. Bartlett provided a SNAS system description. SNAS will consolidate the functionalities of the UPS and SWSI into a single system, and will replace the UPS and SWSI as the primary scheduling interface between the SN customer and the SN. However, existing customers with unique SN interface systems will not be precluded from continuing to use their current systems. Also, customers currently using their own UPS may still continue to use that UPS; however, the responsibility of maintaining and upgrading the UPS will no longer be the responsibility of the SN after SNAS goes operational.

SNAS will provide a network-based (server-client relationship) SN customer interface to the NCCDS and the DAS for scheduling and real-time service monitoring and control. SNAS will support all customer messages as defined in 451-ICD-NCCDS/MOC (ICD between the NCCDS and the MOC) and 452-ICD-DAS/SNAS (ICD between DAS and SNAS). The ICD between DAS and SNAS is currently being written and has not yet been approved or CCBed; however, the foundation for this document is the existing interface between DAS and SWSI.

SNAS will also allow access from the NISN Closed IONet, the NISN Open IONet, and the public Internet, just as SWSI does. The SNAS client software can run on any PC or workstation that can run Java Virtual Machine.

The three major components of the SNAS architecture are the servers (prime and redundant servers on the Closed IONet side, and prime and redundant servers on the open IONet side), the database, and the client software on the MOC workstations. The connection between the open servers and the closed servers goes through the NISN Secure gateway. Mr. Bartlett pointed out that the client software is part of SNAS; however, the actual workstation or PC that it is placed on is the property of the customer MOC. The client software will provide access to the SN via the Open or Closed SNAS servers.

Mr. Bartlett discussed SNAS interfaces (page 13 of the presentation). Several questions were raised regarding the interfaces. Mr. Mike Trapp (LMTO) agreed to generate an RFA to ensure that all pertinent questions are answered.

III. CONCEPT OF OPERATIONS

Ms. Denise Gilliland (ITT Industries) discussed the SNAS concept of operations. Mr. Tom Gitlin inquired as to whether requirements for explicit parameter checking have been written; Mr. Stevens stated that the requirements have not been written. Mr. Gitlin asked if Mr. Stevens had any insight into how deeply the current systems do parameter validation checking. Mr. Stevens replied that this is currently being looked

at. Some of the details will be captured in the Subsystems Requirements document. Mr. Stevens noted that the SNAS would do an equivalent amount of parameter validation checking compared to current systems.

Ms. JoAnn Sidotti (HTSI/CSR) stated that JSC currently uses an UPS system for scheduling and a separate real-time system. Ms. Sidotti inquired as to whether JSC could keep their current real-time system and utilize SNAS for the scheduling portion. Moving their current real-time system could cause a large impact. Ms. Sidotti agreed to generate an RFA on this issue.

Mr. Christopher Silva (HTSI/GPM-Code 420) raised several questions regarding automated GCMRs. Mr. Silva agreed to generate an RFA regarding this issue. Mr. Trapp stated that he would like to see a way to do canned GCMRs and send those GCMRs in an automated way. Mr. Trapp agreed to generate an RFA on this issue as well.

Ms. Cathy Barclay (HTSI/CSOC) inquired about SNAS fail-over. It was noted that SNAS would have the same fail-over capabilities as SWISI; however, the implementation may not be the same. There is currently a requirement for fail-over availability but not one for fail-over time.

IV. REQUIREMENTS

Ms. Trish Gravatt (ITT Industries) discussed requirements. Ms. Gravatt discussed methodology, system functionality, client functionality, NCCDS functionality, DAS functionality, and performance requirements. Ms. Gravatt noted that the client would support data/file transfer to and from the NCCDS/DAS. It is still undecided as to how much validation will be performed on the client side, since there is validation already within the NCCDS. There are plans to check against the TDRSS Scheduling Windows (TSWs) and to perform parameter verification.

Schedule requests available for the NCCDS include the Schedule Add Request (SAR), the Schedule Delete Request (SDR), the Schedule Replace Request (RR), the alternate SAR (ASAR), and the Schedule Wait List Request (SWLR). These will be created in an interactive, one at a time mode. There will also be a capability to store, retrieve, modify, and delete schedule request building blocks (as UPS currently does). Prototypes can be generated and stored, and user-defined patterns can be added to them.

Ms. Gravatt noted that SNAS, like SWSI, will be able to retrieve current TUT information from the NCCDS and store it so that it is accessible to Internet and Open IONet SNAS customers.

There was a discussion regarding User Performance Data (UPD) messages and whether or not they can be dual-routed to 2 different destinations. Ms. Sidotti agreed to generate an RFA regarding this issue.

Ms. Gravatt discussed vector storage and transmission. Based on the customer's login information and access privileges, they will have the following capabilities in terms of vector storage:

- Enter the latitude, longitude and altitude.
- Enter the Cartesian position and velocity.
- Convert a set of LLA data for a customer spacecraft into a Type 8 IIRV for that spacecraft.
- Convert a customer-entered set of LLA data for a customer spacecraft into a Type 1 spacecraft vector.
- Directly enter IIRVs or import files of IIRVs manually and/or automatically.
- Select one or more IIRVs for transmission to the NCCDS.
- Display previously transmitted IIRVs.

Mr. Trapp inquired about the capability of copying and editing previously sent vectors. Mr. Stevens stated that this is a current enhancement to SWSI. Enhancements to SWSI are being looked at to determine if it would be feasible to move them to SNAS. Most of them will probably be moved into SNAS.

Mr. Trapp also inquired about the capability to delete extra vectors. Mr. Stevens stated that once a vector is created and sent, it's off to the NCCDS or DAS. Once you import the file, there is no edit capability. There is a requirement to allow displays of previously transmitted vectors. This requirement is very high level, and can probably go into some more detail to allow for editing, etc. Mr. Stevens asked Mr. Trapp to reference requirement 4.1.3.5.9 in an RFA form regarding this issue.

Ms. Gravatt discussed receipt of DAS alerts. Upon receipt of a DAS alert, the SNAS will notify the customer implied by the SIC specified in the DAS alert message and make the text of the DAS alert message available for review by the customer. If the DAS alert message does not apply to a specific user, the SNAS will notify all customers and make the text available for review to all customers. Mr. Stevens noted that with SWSI, any alert is sent to the alert display by default. Optionally, it can be configured so that it also logs into a file. There are three levels of alerts for SWSI: green (information), yellow (warning), and red (critical). Red alerts are very infrequent. Ms. Caren Gioannini (NASA/WSC) stated that alerts are defined in the DAS/SWSI ICD. Ms. Gioannini asked if alerts would be defined in a lower-level design document for SNAS. This issue will be looked into.

Ms. Gravatt discussed database functionality. Mr. Gitlin inquired as to whether a DBMS has been specified. Mr. Stevens stated that ORACLE is being used on SWSI, and may be used on SNAS. However, if an open source system was available that was cheaper than ORACLE, it would be considered for SNAS. Regarding service specification codes (SSCs), Mr. Stevens stated that adding additional SSC codes needs to be coordinated through the WSC operators. Values within the SSCs can be maintained and managed by a designated SNAS Mission Manager.

V. SECURITY

Mr. Bartlett discussed security. SNAS will be compliant with all requisite NPGs, GPGs, IONet Security Plans, DSMC Security Plans, etc. The SNAS security model will be capable of performing certificate authentication between a certificate authority (CA), user certificate, and application certificates. The goal is to provide a framework for authentication, data privacy, data integrity, and non-repudiation of missions that use NASA's TDRSS services (i.e., customers have access to the data that they are supposed to have access to).

Ms. Mary Foote (CSC-Code 297) inquired as to whether encryption will be used. Mr. Stevens stated that per IONET security guidelines, encryption through the firewall is not allowed. However, encrypting from the MOC clients to the SNAS servers is not an issue, and will be done. This is no different than what was done on SWSI.

Other issues were discussed including user authentication, password expiration, etc. Mr. Stevens noted that these issues would be addressed in the Security Plan. Anybody requiring a copy of the Security Plan should contact Mr. Stevens. This document is not available on the SNAS Web page with other SNAS documentation.

VI. SERVER OPERATIONS AND MAINTENANCE

Mr. Bartlett discussed operations and maintenance of the server. The server is required to be capable of continuous unattended operation. It is required to be capable of supporting routine maintenance and system administrative functions without rendering SNAS operationally unavailable to clients. It is required to operate using power and cooling available in the DSMC. Some basic RMA requirements include:

- Mean Time to Repair: Not to exceed 60 minutes.
- Individual SNAS server inherent availability: 0.9998 (for any 10,000-hour period).
- SNAS operational availability: 0.9999 (for any 10,000-hour period).

VII. DOCUMENTATION

Mr. Bartlett discussed SNAS documentation. As noted in the introduction, all SNAS documents are in draft form and are available on the SNAS Web site (http://snas.gsfc.nasa.gov). The SNAS Security Plan is not available online and must be obtained from Mr. Stevens.

VIII. PRODUCT IMPLEMENTATION

Mr. Stevens discussed product implementation. The implementation contractor organization will be the Near Earth Networks Services (NENS) contractor team. Implementation by NENS will begin in January 2004. Implementation contractor requirements are documented in Section 10 (Acquisition Summary) of the SNAS PMP.

Mr. Stevens discussed the implementation schedule. Mr. Stevens noted that documents would be CCBed prior to the PDR. Several meeting attendees noted that the Subsystem Requirement Development should not be conducted after the PDR, as is currently called for in the schedule. Ms. Sidotti stated that she would generate an RFA regarding this issue.

IX. CLOSING REMARKS

Mr. Stevens thanked meeting participants for attending, and asked that all RFAs be submitted to Ms. Jennifer Clark (PAAC-II/SGT) by COB July 25, 2003. RFAs may be submitted via e-mail (Jennifer.G.Clark@gsfc.nasa.gov), telephone (301.286.6269), or facsimile (301.286.0275). RFA forms are available on the SNAS Web site.

(Original Approved by:)

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