

**PROGRAM INFORMATION SYSTEMS MISSION
SERVICES**

***NASA Personnel Payroll System
(NPPS)/X.500 Interface Definition
Agreement***

**July 9, 2002
Version 1.0**



National Aeronautics and _____
Space Administration

Marshall Space Flight Center _____
Huntsville, Alabama

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1.0 Introduction

This Interface Definition Agreement (IDA) establishes the specifications for an interim interface between the NASA Personnel Payroll System (NPPS) and the NASA X.500 Directory System (hereafter referred to as “X.500”). This interface supports the Integrated Financial Management Program (IFMP) Travel Manager (TM) system by providing an employee’s current e-mail address and other X.500 data as specified in Appendix A, along with employee information extracted from NPPS.

2.0 Purpose

The purpose of this interface agreement is to describe the dialog and data transferred between NPPS and the X.500 system. This agreement also defines the specific technical requirements for integration, data element definition, functional execution, and error handling routines.

3.0 Roles and Responsibilities

This section outlines at a high level the responsibilities that the Information Services Department (ISD) Sustaining Engineering Support for Agencywide Administrative Systems (SESAAS) Team, the X.500 Support Team, and the NPPS Operations Team are accountable for in developing and maintaining this interface. These roles and responsibilities include:

SESAAS will be responsible for:

- The mainframe software application and documentation required to generate the NPPS to X.500 interface flat file (See Appendix A for file format)
- The mainframe software application and documentation to read and merge X.500 data with NPPS data for exporting to the TM system
- Physical configuration management control over this IDA.

X.500 Support will be responsible for:

- Software and documentation required to extract the X.500 information identified in Appendix A
- X.500 operation support.

NPPS Operations will be responsible for:

- Coordinating and executing the bi-weekly job streams necessary to export and import X.500 interface files
- Executing the X.500 / NPPS data merge
- Exporting the NPPS/TM interface file.

The Organizations listed above will approve this IDA in its final form, and these Teams will be available to answer questions and resolve interface issues concerning this IDA. All changes to the final form of this IDA will be documented in the Document Change Record.

4.0 Interface Details

This section outlines the scenarios that occur as a result of the NPPS and X.500 interfaces and the overall mechanisms, error handling, file format, and exchange model.

4.1 Scenario NPPS to X.500

NPPS will generate, for each active NPPS Payroll employee, an employee record on the interface file containing the employee's NASA center number, Uniform Universal Person Identification Code (UUPIC), and the employee's four name parts: last-name, first-name, middle-initial, and name suffix, if present.

4.2 Scenario X.500 to NPPS

The X.500 system will read each employee record on the NPPS interface file and, using the employee's UUPIC, locate and extract the requested employee information from the X.500 directory system. The X.500 system will store the extracted information in the specified fields within the employee record. If a UUPIC match is not successful, or if the sought after X.500 data is not present for an employee, then the X.500 data fields will be filled with spaces. It is important to note that each employee record on the interface file must be returned, populated with X.500 data or not, in the same order to NPPS.

4.3 Scenario Merge of X.500 Data With NPPS/TM Data

The X.500 data returned to the mainframe are merged with additional NPPS data to produce a NPPS/TM interface file.

Figure 1 depicts the data exchanges in the NPPS/X.500/TM interface process.

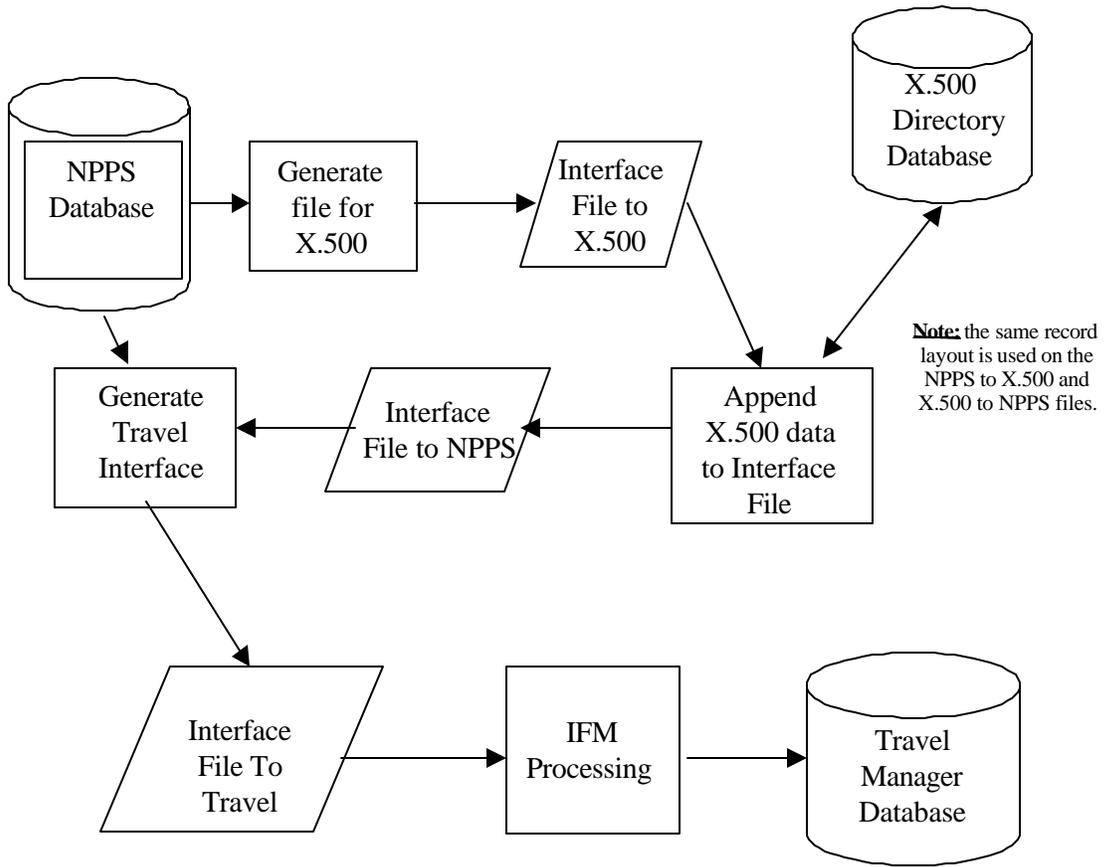


Figure 1 The Bi-weekly NPPS / X.500 & NPPS / TM Interfaces Data Flow

4.4 Mechanism

NPPS is a mainframe application that was written using the NATURAL programming language. This application runs against the ADABAS database management system (DBMS). Conversely, the X.500 system is a server application written in Perl and runs against the X.500 directory system.

The mechanism for completing the interface requirements will be as follows:

- NPPS will generate the NPPS to X.500 interface file, in a batch mode, on a bi-weekly basis. There will be the capability to control the extract from NPPS data by NPS2-PAY-MASTER PAY-CENTER-CODE, so that one or more centers may be extracted at a time. This center selection will be a function of the runs Job Control Language. Appendix B lists the NASA center numbers.
- An automated weekly X.500 job stream will read the NPPS interface file and populate X.500 data items in the employee records. This automated job stream runs weekly, as it doesn't set up well on a bi-weekly basis.

4.5 Error Handling

The NPPS Operational Team and the X.500 Support Group will be responsible for resolving any data exchange errors or exceptions. Errors involving the data contents of the interface files will be handled with cooperation between SESAAS and the X.500 Support Group.

4.6 File Format

The NPPS/X.500 interface file and record format are defined in Appendix A. General formatting standards or criteria used for this interface file will be as follows:

- A column-oriented, fixed record length, ASCII character flat file
- Character fields will be left justified and space filled to the right
- Unpopulated X.500 data items will be space filled
- The ASCII carriage return will be used to mark the end of a record.

4.7 Exchange Model

The *exchange model* is defined as the set of data exchanged between applications, the business rule directing the behavior of the data, and the metadata that describes the interface touch points. The exchange model documents, for each interface touch point, the source (originating) application and the target (data recipient) application. The metadata provides information describing the functional and technical areas of the interface. The specifics of the exchange model are included in Appendix C.

Appendix A – NPPS to X.500 and X.500 to NPPS INTERFACE

NPPS Selection Criteria: Only active NPPS employees' data will be loaded into the flat file. Employees terminating in the current pay period will be considered inactive for this process.

Employee Record						
Field NO.	Element Name	Description	Length	Column	NPPS File NPPS Field (Format)	COMMENTS
1	UUPIC	Uniform Universal Person Identification Code	X(9)	1-9	NPS2-PER-MASTER. PER-UUPIC	
2	Center number	A number used to identify each of the ten NASA centers	X(4)	10-13	NPS2-PAY-MASTER PAY-CENTER-NUMBER (A4)	
3	Last Name	The last name of a NASA employee	X(22)	14-35	NPS2-PAY-MASTER PAY-NAME-LAST (A22)	Field may be dropped with a later change
4	First Name	The first name of a NASA employee	X(12)	36-47	NPS2-PAY-MASTER PAY-NAME-FIRST (A12)	Field may be dropped with a later change
5	Middle Initial	The middle initial of a NASA employee	X(1)	48	NPS2-PAY-MASTER PAY-NAME-MI(A1)	Field may be dropped with a later change
6	Name suffix	The name suffix of a NASA employee (i.e. JR, SR, III)	X(3)	49-51	NPS2-PAY-MASTER PAY-NAME-SUFFIX (A3)	Field may be dropped with a later change
7	E-mail address	The e-mail address of a NASA employee	X(60)	52-111		Data from the X.500 Directory
8	Employee work phone number	The work phone number of a NASA employee	X(20)	112-131		Data from the X.500 Directory
9	Employee FAX phone number	The FAX phone number of a NASA employee	X(20)	132-151		Data from the X.500 Directory
10	Employee ID	An employee ID	X(10)	152-161		Data from the X.500 Directory

Appendix B – Center Names and Numbers

AGENCY NAME	CENTER NUMBER
HEADQUARTERS	1000
AMES RESEARCH CENTER	2100
GLENN RESEARCH CENTER	2200
LANGLEY RESEARCH CENTER	2300
DRYDEN FLIGHT RESEARCH CENTER	2400
GODDARD SPACE FLIGHT CENTER	5100
MARSHALL SPACE FLIGHT CENTER	6200
STENNIS SPACE CENTER	6400
JOHNSON SPACE CENTER	7200
KENNEDY SPACE CENTER	7600

Appendix C – Exchange Model

Metadata Property	Description
<p>Business Event (Trigger)</p> <p>The <i>business event</i> is the activity to which the business process must respond. This should include a description of process-mapping number, what the <i>event</i> is, and who initiates it.</p>	<p>Scheduled bi-weekly batch interfaces, one input and one output interface each between NPPS and X.500. These interfaces do not update either NPPS or X.500 databases. The purpose for these interfaces is to gather data to finally be interfaced from NPPS to the IFM TRAVEL Manager system. The bi-weekly set of interfaces is triggered by NPPS. X.500 then responds back with an interface file enhanced with X.500 data.</p>
<p>Source Application(s)</p> <p>References the application(s) name(s) that initiates the action that occurs between one or more target applications. This action may be a request for information from other applications or may be the initiator of a data exchange with other applications based on the business event.</p>	<p>NPPS script/program</p>
<p>Target Application(s)</p> <p>References the application(s) name(s) that responds to the action requested by the source application(s). This action may be a response to an information request from other applications or may be the recipient of a data exchange from other source applications based on the business event.</p>	<p>X.500 script/program</p>
<p>Data Attributes</p> <p>References the application(s) name(s) that responds to the action requested by the source application(s). This action may be a response to an information request from other applications or may be the recipient of a data exchange from other source applications based on the business event.</p>	<p>See Appendix A</p>
<p>Data Transformation / Crosswalks</p> <p>Data transformation focuses on the physical structure of the data attributes as they originate from the source application. It must be determined if there is a required crosswalk to handle the act of transforming the data attributes to the physical structure of the receiving data attributes as they reside in the target application(s).</p>	<p>See Appendix A</p>
<p>Interface Category</p> <p>(Internal or external to the software system i.e. ERP, NPPS, MARTS)</p>	<p>External</p>
<p>Interface Description</p> <p>Provide description of the activity that is occurring and requires a touch point with one or more applications. This activity may be a request or response for information or it may denote how the information will be exchanged, such as to publish or subscribe.</p>	<p>An extract of information from NPPS on a bi-weekly basis via a scheduled batch job will occur. The extract file will be transmitted to the X.500 production server for processing. After X.500 processes the NPPS interface file, by adding information to this interface, the file will be transmitted back to NPPS for final processing required to generate a Travel Manager interface file.</p>

<p>Expected Duration for use of the interface</p> <p>Based on the IFMP schedule for module implementations, a timeframe for the expected duration for use of the interface can be determined.</p>	<p>For the life of NPPS or X.500.</p>
<p>Integration Options</p>	<p>N/A</p>
<p>Type of Interface</p> <p>The <i>type of interface</i> relates to the behavior of the exchanged data. It identifies that when the target application(s) receives the data how it will be used (Create, Read, Update, or Delete).</p>	<p>Create and update traveler information within TM</p>
<p>Data Persistence</p> <p>Persistence refers to how application data is stored, such as database, tape, flat file, etc.</p>	<p>Flat file</p>
<p>Application Programming Language (Processing Technology)</p> <p>Identifies the <i>programming language</i> used to develop the application. Examples include COBOL, FORTRAN, Natural, Visual Basic, etc.</p>	<p>Source: Natural Target: Perl</p>
<p>Hardware Platform</p> <p>Identifies the hardware platform where the application resides, such as IBM 390, HP9000.</p>	<p>NPPS: <u>IBM 9672 Mainframe</u> X.500: <u>TATUNG</u></p>
<p>Operating System</p> <p>Identifies the operating system that is used on the hardware platform where the application resides, such as UNIX, AS400, etc.</p>	<p>NPPS: <u>IBM OS/390 version 4</u> X.500: <u>SOLARIS 7</u></p>
<p>Communication Protocol</p> <p>Identifies the communication protocol that is used for communication by the hardware platform where the application resides, such as FTP, DNS, SNMP, TCP/IP, Novell NetWare, etc.</p>	<p>SECURE COPY (SCP)</p>
<p>Server Address</p> <p>The specific address for the hardware platform where the application resides.</p>	<p>*****</p>
<p>Velocity</p> <p>Identifies the execution method for the touch point transaction processing, such as, real-time or batch.</p>	<p>Batch</p>
<p>Error Handling / Failure Notification Procedure / Rollback</p> <p>Identifies the approach for error handling, such as</p> <ul style="list-style-type: none"> - If the transaction fails, does it perform a back out of in-process transactions? - Are there forward recovery procedures and what are they? - Does the database do a rollback if the 	<p>The NPPS/X.500 error handling details are as follows:</p> <ul style="list-style-type: none"> • Automated or manual notification of error by discovery party. • Appropriate data owners will resolve any exceptions. <p>Restarts will be handled by the NPPS Operations Group.</p>

transaction fails to complete? How is a restart handled if the transaction fails?	
Modification / Customization needed	N/A
Upgrade Implications on Source or Target	N/A