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Request For Quotation

And

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In the

FEDERAL AVIATION ADMINISTRATION (FAA) SPECIAL ACTIVITY AIRSPACE (SAA) DISSEMINATION PILOT

(FAA SAA DISSEMINATION PILOT)

Appendix C to Annex B – SR Web Service Description Document (WSSD)

RFQ Issuance Date: September 20, 2010

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U.S. Department of Transportation
Federal Aviation Administration

Web Service Description Document

Aeronautical Information Management
Special Activity Airspace Management Static Repository Service

Version 0.3

August 16, 2010

Web Service Description Document

Approval Signature Page

**Aeronautical Information Management
Special Activity Airspace Management
Static Repository Service**

Approval Signatures			
Participant	**Name**	**Signature**	**Date Signed**

REVISION RECORD			
Revision Letter	**Description**	**Date**	**Entered By**
Version 0.1	Initial Draft	May 28, 2010	Kevin Lew
Version 0.2	Addressed internal comments.	June 1, 2010	Kevin Lew
Version 0.3	Addressed comments from SWIM, the Static Repository Developers, and ERAM	August 16, 2010	Kevin Lew

AIM SAA SR WSDD – no security
Referenced in FAA SAA Dissemination OGC Pilot

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List of Tables

1.   Scope

This Web Service Description Document (WSDD) was prepared in accordance with Federal Aviation Administration (FAA) Standard FAA-STD-065. It provides the design characteristics for the interface between Special Activity Airspace (SAA) Static Repository (SR) Service and its web service clients. This WSDD satisfies the interface design requirements for the Static Repository Service requirements documented in the Aeronautical Information Management (AIM) Special Activity Airspace Management Web Services Interface Requirements Document (IRD).

1.1   Background

This document describes the interface between the AIM SAA SR Service and web service clients.

SAA is an unofficial term of convenience to collectively describe Special Use Airspace (SUA), Air Traffic Control Assigned Airspace (ATCAA), and other airspace that can be reserved for use. The use of the term SAA in this document refers to SUAs and ATCAAs.

An SUA is a region of airspace designated to be used (typically by the military) based on a schedule.

An ATCAA is an airspace assigned by air traffic control to provide air traffic segregation between the specified activities being conducted within the assigned airspace and other Instrument Flight Rules (IFR) traffic.

The SAA SR maintains the static definitions of SAAs. The static definition is a digital representation of the legal definition of the SAA using the Aeronautical Information Exchange Model (AIXM) specification. The SAA SR Service is a System Wide Information Management (SWIM)-compliant web service that allows for the ability to update SAA static definitions as well as disseminate them to users of the service.

2. Applicable Documents

2.1 Government Documents

The following documents form a part of this WSDD to the extent specified herein.

FAA SPECIFICATIONS:	
December 22, 2009	System-Wide Information Management (SWIM) Service Specification Document (SvSD) Segment 1, version 1.7
	SWIM WS-I Basic Security Profile 1.1
May 23, 2007	System-Wide Information Management (SWIM) Final Program Requirements (FPR) Segment 1, Rev. 7.3
FAA STANDARDS:	
FAA-STD-063 May 1, 2009	Standard Practice, XML Namespaces
FAA-STD-064 May 1, 2009	Standard Practice, Web Service Registration
FAA-STD-065 February 26, 2010	Standard Practice, Preparation of Web Service Description Documents
FAA-STD-066 February 26, 2010	Standard Practice, Web Service Taxonomies
FAA-STD-025f November 30, 2007	Preparation of Interface Documentation
STANDARDS FOR FAA SWIM PROGRAM COMPLIANCE:	
IETF RFC 2616 June 1999	Hypertext Transfer Protocol – HTTP/1.1
W3C SOAP v. 1.2, Pt. 1 Recommendation April 27, 2007	SOAP Version 1.2 Part 1: Messaging Framework (Second Edition)
W3C XML Recommendation September 29, 2006	World Wide Web Consortium Extensible Markup Language (XML) version 1.0, fourth edition.
OASIS UDDI v. 3.0.2 October 19, 2004	Universal Description, Discovery, and Integration (UDDI) Standard, version 3.0.2
W3C WSDL v. 1.1 Note March 15, 2001	World Wide Web Consortium Web Services Description Language (WSDL) version 1.1
IETF RFC 2246 January 1999	Transport Layer Security (TLS) – version 1.0
IETF INTERNET-DRAFT November 18, 1996	The Secure Sockets Layer (SSL) Protocol Version 3.0
OTHER FAA PUBLICATIONS:	
April 10, 2008	JO 7400.2G – Procedures for Handling Airspace Matters

February 16, 2010   JO 7400.8S – Special Use Airspace

March 9, 2009   System Wide Information Management (SWIM)
Governance Plan, Version 2.1

Aeronautical Information Management (AIM) Special Activity Airspace
(SAA) Management Web Services Interface Requirements Document
(IRD) version 1.0

June 23, 2010

https://swimwiki.tc.faa.gov/download/attachments/6881348/SWIM+Special+Activity+Airspace+Requirements.doc

2.2 Non-Government Standards and Other Publications

The following documents form a part of this WSDD to the extent specified herein.

STANDARDS:

Aeronautical Information Exchange Model 5.0 Specification October 2008	The model used for defining SAAs used in the transmission to and from the SAA SR Service. http://www.aixm.aero/public/standard_page/download_5_0.html
Internet Engineering Task Force (IETF) Request for Comments (RFC) 791 September 1981	Internet Protocol (IP) as updated by RFC 1349
IETF RFC 792 September 1, 1981	Internet Control Message Protocol (ICMP), updated by RFC 950
IETF RFC 793 September 1981	Transmission Control Protocol (TCP), updated by RFC 3168
IETF RFC 826 November 1, 1982	Ethernet Address Resolution Protocol (ARP)
IETF INTERNET-DRAFT November 18, 1996	The Secure Sockets Layer (SSL) Protocol Version 3.0
IETF RFC 2460 December 1998	Internet Protocol, Version 6 (IPv6) Specification
Web Services Security UsernameToken Profile 1.1 February 1, 2006	Web Services Security UsernameToken Profile 1.1, OASIS Standard Specification http://docs.oasis-open.org/wss/v1.1/wss-v1.1-spec-os-UsernameTokenProfile.pdf

3. Definitions

SOAP - A protocol specification for exchanging structured information in the implementation of Web Services in computer networks.

3.1 Abbreviations and Acronyms

AIM	Aeronautical Information Management
AIXM	Aeronautical Information Exchange Model
ARP	Address Resolution Protocol
ARTCC	Air Route Traffic Control Center
ATCAA	Air Traffic Control Assigned Airspace
ATM	Air Traffic Management
ERAM	En Route Automation Modernization
FAA	Federal Aviation Administration
FAA-STD	FAA Standard
GML	Geography Markup Language
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol over Secure Socket Layer
ICAO	International Civil Aviation Organization
ICMP	Internet Control Message Protocol
ID	Identifier
IETF	Internet Engineering Task Force
IP	Internet Protocol
IRD	Interface Requirements Document
JMS	Java Message Service
MEP	Message Exchange Pattern
MILOPS	Military Operations Systems
NAS	National Airspace System
OSI	Open System Interconnection
RFC	Request For Comments
SAA	Special Activity Airspace
SAA OR	Special Activity Airspace Operational Repository
SAA PR	Special Activity Airspace Project Repository
SAA SR	Special Activity Airspace Static Repository
SSL	Secure Socket Layer
STD	Standard
SUA	Special Use Airspace
SvSD	SWIM Services Specification Document
SWIM	System-Wide Information Management
TBD	To Be Determined
TCP	Transmission Control Protocol
TLS	Transport Layer Security
UDDI	Universal Description, Discovery, and Integration
UUID	Universally Unique Identifier
WSDD	Web Service Description Document
WSDL	Web Services Description Language
WS-I	Web Services Interoperability Organization
XML	Extensible Markup Language

4.   Web Services Properties and Capabilities

The SAA SR Service is a collection of three different web services: the SAA SR Put Service, the SAA SR Get Service, and the SAA SR Notification Service.

The SAA Static Repository is populated through submissions of SAAs from the SAA Project Repository through calls to the SAA SR Put Service. The web service handles either the insertion of a new SAA into the Static Repository or an update to an existing SAA.

The SAA SR Get Service provides operations for service consumers to call to retrieve data related to SAAs through request/response services. These requests can include retrieving SAA definitions, Universally Unique Identifiers (UUID), names, as well as validating SAAs submitted by the service consumer.

The SAA SR Notification Service is a Java Message Service (JMS) publish/subscribe (pub/sub) service that provides notifications for when an SAA is added to or updated in the Static Repository.

The following sections describe the initial version of SAA SR Service, in terms of its service profile, consumer, provider, overall usage, security and quality of service attributes.

4.1   Service Profile

The SAA SR Put Service provides a service interface for the SAA Project Repository to submit new and modified SAA static definitions. The SAA SR Notification Service then notifies its subscribers via JMS pub/sub topics that new or modified SAAs are present in the SR. The users of the SAA SR Get Service can then request the static definitions of these specific SAAs.

The service namespaces are:

urn:us:gov:dot:faa:aim:saa:sr:wsdl:SaaGetService

urn:us:gov:dot:faa:aim:saa:sr:wsdl:SaaPutService

The service version is version 1, and the service category according to FAA-STD-066 is Air Transportation Airspace Information Service, ID 1.4.1. The SAA SR Service is in the development stage currently and will be in the operational stage upon deployment. The SAA SR Service provides a routine service, as characterized in the NAS-SR-1000.

4.1.1   Service Provider

The SAA SR Service is provided by Aeronautical Information Management (AIM). The AIM group is the authoritative government source for collecting, validating, storing, maintaining, and disseminating aeronautical data concerning the United States and its territories to support real-time aviation activities.

4.1.1.1   Point of Contact

Douglas Sage
Automation Specialist, Aeronautical Information Services (AIS) Automation, AJR-32
Doug.Sage@faa.gov

4.1.2   Service Consumers

Special Activity Airspace Project Repository, AIM.

Special Activity Airspace Operational Repository Service, AIM.

En Route Automation Modernization (ERAM).

4.1.3 Service Functionality

The SAA SR Service provides the ability to insert new and update existing static definitions of SAAs as well as provide the ability to retrieve these static definitions on request. The SAA SR Service also provides a pub/sub topic that notifies subscribers when an SAA static definition has been added or changed.

The existing management of SUA definitions exchanges the definitions using different data formats, and at times using manual methods (sending a CD through the mail). The SAA SR Service will enforce a consistent, human readable data exchange format, and an entirely electronic means of transmitting SAA definition information.

4.1.4 Security

Section redacted.

4.1.4.1 Roles

The first version of the SAA SR Service has two roles:

SAA Approver – Users who can update or submit a new SAA to the SAA SR Service.

SAA Static Data Reader – Users who can request SAA definitions from the SAA SR Service.

4.1.4.2 Access Control Mechanisms

The SAA SR Service will restrict access to its web services through user authentication on each service call. A username/password combination will be contained in the SOAP header in each request to the service.

Access control to the SR Notification Service requires the JMS client to provide username/password.

4.1.4.3 Security Policies

The SAA SR Service is in compliance to the SWIM WS-I Basic Security Profile 1.1.

4.1.5 Quality of Service

The SAA SR Service meets the following quality of service parameters:

TBL 4-1
SAA SR Service Quality of Service Parameters

QoS Parameter	Definition	Value
Availability	A measure of the lowest probability that a system or constituent piece will be operational during any randomly selected period of time, or, alternatively, the fraction of the total available operating time that the system or constituent piece is operational.	.9975

4.1.6 WSDL Documents

There are two WSDL documents, one for the SaaStaticRepositoryPutService and one for the SaaStaticRepositoryGetService. The WSDL documents are provided through the namespace listed in section 4.1**Error! Reference source not found.**.

They are also available through the following links:

SAA SR Put Service:
https://swimwiki.tc.faa.gov/download/attachments/6881321/SAAStatic-PutService.wsdl

SAA SR Get Service:
https://swimwiki.tc.faa.gov/download/attachments/6881321/SAAStatic-GetService.wsdl

4.2 Service Interfaces

The service interfaces section defines the data element types, messages exchanged, operations available, and interface provided in this version of the SAA SR Service.

4.2.1 Types

TBL 4-2 defines the data elements (types) used in the requests to and responses from the SAA SR Service for submissions. Each data element of a complex type, then lists out the sub data elements that it is composed of.

TBL 4-2
SAA SR Put Service Data Elements

Data Element	Sub Data Element	Element Definition	Occurrence	Obligation	Description
Fault					A Fault containing the reason why a service call is not successful.
	Body	String	1	Required	A description of the fault.
InsertSaa Request					Used to submit an SAA for insert into the SAA SR.
	SaaMessage	AIXM SaaMessage Object	1	Required	An AIXM object that contains the definition of the SAA. Detailed in Appendix A.
InsertSaa Response					Used confirm if an SAA insert was successful.
	Success	boolean	1	Required	Indicates success.
	Uuid	String	1	Required	The Universally Unique Identifier of the SAA. A 32 character string that uniquely identifies an AIXM feature within a codespace.
	Codespace	String	1	Required	A URN used to resolve the UUID.
	Type	String Possible Values: SUA ATCAA SAA_COMPONENT	1	Required	The type of SAA submitted.
	Designator	String	1	Required	The designator of the SAA that was submitted to the service for insertion.

Data Element	Sub Data Element	Element Definition	Occurrence	Obligation	Description
UpdateSaa Request					Used to submit an SAA update to the SAA SR.
	SaaMessage	AIXM SaaMessage Object	1	Required	An AIXM object that contains the definition of the SAA. Detailed in Appendix A.
UpdateSaa Response					Used to confirm if an SAA update was successful.
	success	boolean	1	Required	Indicates success.
	uuid	String	1	Required	The Universally Unique Identifier of the SAA. A 32 character string that uniquely identifies an AIXM feature within a codespace.
	codespace	String	1	Required	A URN used to resolve the UUID.
	type	Possible String values: SUA ATCAA SAA_COMPONENT	1	Required	The type of SAA submitted.
	designator	String	1	Required	The designator of the SAA that was submitted to the service for update.
InsertUnit Request					Used to submit a Unit for insert into the SAA SR.
	SaaMessage	AIXM SaaMessage Object	1	Required	An AIXM object that contains the definition of the Unit. Detailed in Appendix A.
InsertUnit Response					Used confirm if a Unit insert was successful.
	success	boolean	1	Required	Indicates success.
	uuid	String	1	Required	The Universally Unique Identifier of the Unit. A 32 character string that uniquely identifies an AIXM feature within a codespace.
	codespace	String	1	Required	A URN used to resolve the UUID.
	name	String	1	Required	The name of the Unit submitted.

Data Element	Sub Data Element	Element Definition	Occurrence	Obligation	Description
	type	Possible String values: MIL MILOPS OTHER	1	Required	The type of Unit submitted.

TBL 4-3
SAA SR Get Service Data Elements

Data Element	Sub Data Element	Element Definition	Occurrence	Obligation	Description
Fault					A Fault containing the reason why a service call is not successful.
	body	String	1	Required	A description of the fault.
UuidKeyType					The unique key for a UUID. A string that is unique within the paired codespace that uniquely identifies a specific entity (i.e., SAA, Unit).
	uuid	String	1	Required	The Universally Unique Identifier of the SAA. A 32 character string that uniquely identifies an AIXM feature within a codespace.
	codespace	String	1	Optional	A URN used to resolve the UUID.
SaaKeyType					The key for an SAA.
	name	String	1	Optional	The name of the SAA.
	uuid	String	1	Optional	The Universally Unique Identifier of the SAA. A 32 character string that uniquely identifies an AIXM feature within a codespace.
	codespace	String	1	Optional	A URN used to resolve the UUID.
SaaUuidType					A combination of the SAA name and type.
	name	String	1	Required	The name of the SAA.
	type	saaType Possible values: SUA ATCAA SAA_COMPONENT	1	Required	The type of SAA.
UnitKeyType					The key data for a Unit.

AIM SAA SR WSDD – no security
Referenced in FAA SAA Dissemination OGC Pilot

Data Element	Sub Data Element	Element Definition	Occurrence	Obligation	Description
	uuid	String	1	Optional	The Universally Unique Identifier of a Unit. A 32 character string that uniquely identifies an AIXM feature within a codespace.
	codespace	String	1	Optional	A URN used to resolve the UUID.
	name	String	1	Optional	The name of the Unit.
	designator	String	1	Optional	The designator for the Unit.
SaaUuid Element					Used in the retrieval of the UUID of an SAA.
	name	String	1	Optional	The name of the SAA.
	type	String	1	Optional	The type of the SAA.
GetUuid Request					Used to retrieve a requested number of new UUIDs.
	count	int	1	Required	The number of UUIDs requested.
GetUuid Response					Used to return a set of new UUIDs to the service consumer.
	UuidKey	UuidKeyType	Maximum of 100	Required	The Universally Unique Identifier. A 32 character string that is used to uniquely identify an AIXM feature within a codespace.
GetSaaByUuid Request					Used to request an SAA with a specific UUID.
	uuid	string	1	Required	The Universally Unique Identifier of the SAA. A 32 character string that uniquely identifies an AIXM feature within a codespace.
	codespace	string	1	Required	A URN used to resolve the UUID.
	startTime	dateTime	1	Optional	The start time of the interval that the SAA request is for.
	endTime	dateTime	1	Optional	The end time of the interval that the SAA request is for.
GetSaaByUuid Response					Used to return a requested SAA to the service consumer.

Data Element	Sub Data Element	Element Definition	Occurrence	Obligation	Description
	SaaMessage	AIXM SaaMessage Object	1	Required	An AIXM object that contains the definition of the SAA. Detailed in Appendix A.
GetSaaNames Request					A request to get a list of all active and pending SAA names. There are no sub data elements.
GetSaaNames Response					A response containing the keys for all active and pending SAAs.
	SaaKey	SaaKeyType	Unbounded	Optional	The key for an SAA.
GetSaaUuid Request					The given SAA name and type used to get the UUID
	SaaUuidElement	SaaUuidElement	1	Required	The SAA name and type
GetSaaUuid Response					The response containing the UUID for the given SAA.
	uuid	String	1	Required	The Universally Unique Identifier of the SAA. A 32 character string that uniquely identifies an AIXM feature within a codespace.
	codespace	String	1	Required	A URN used to resolve the UUID.
GetUnits Request					A request to get a list of all Units. There are no sub data elements.
GetUnits Response					A list of Unit data.
	UnitKey	UnitKeyType	Unbounded	Optional	The key information for a Unit.
ValidateSaa Request					An SAA definition sent in to be validated.
	SaaMessage	AIXM SaaMessage Object	1	Required	An AIXM object that contains the definition of the SAA. Detailed in Appendix A.
ValidateSaa Response					Whether a submitted SAA is valid or not and why.
	success	Boolean	1	Required	Indicates success.
	message	String	1	Optional	The reason why an SAA is invalid.

4.2.2 Messages

TBL 4-4 defines the messages sent between the SAA SR Put Service and its users.

TBL 4-4
SAA SR Put Service Message Descriptions

Name	Definition	Data Elements (Parts)	Direction
UpdateSaaRequest	Used by the SAA Project Repository to submit an SAA update.	UpdateSaaRequest	SAA Project Repository -> SAA SR
UpdateSaaResponse	Used by the SAA SR Service to respond with if an SAA update is successful or not.	UpdateSaaResponse	SAA SR -> SAA Project Repository
InsertSaaRequest	Used by the SAA Project Repository to submit an SAA insert.	InsertSaaRequest	SAA Project Repository -> SAA SR
InsertSaaResponse	Used by the SAA SR Service to respond with if an SAA insert is successful or not.	InserSaaResponse	SAA SR -> SAA Project Repository
InsertUnitRequest	Used by the SAA Project Repository to submit a Unit insert.	InsertUnitRequest	SAA Project Repository -> SAA SR
InsertUnitResponse	Used by the SAA SR Service to respond with if a Unit insert is successful or not.	InsertUnitResponse	SAA SR -> SAA Project Repository
Fault	Used by the SAA SR Service when a call is invalid or an error occurs.	Fault	SAA SR -> Service User

Table 4-5 defines the messages sent between the SAA SR Get Service and its users.

TBL 4-5
SAA SR Get Service Message Descriptions

Name	Definition	Data Elements (Parts)	Direction
GetSaaNamesRequest	Used by a user to request a list of SAA names.	GetSaaNamesRequest	Service User -> SAA SR
GetSaaNamesResponse	Used by the SAA SR Service to return a list of SAA names.	GetSaaNamesResponse	SAA SR -> Service User
GetUnitsRequest	Used by a user to request a list of Units.	GetUnitsRequest	Service User -> SAA SR
GetUnitsResponse	Used by the SAA SR Service to return a list of Units.	GetUnitsResponse	SAA SR -> Service User
GetSaaByUuidRequest	Used by a user to request an SAA with a given UUID.	GetSaaByUuidRequest	Service User -> SAA SR
GetSaaByUuidResponse	Used by the SAA SR Service to return an SAA with a given UUID.	GetSaaByUuidResponse	SAA SR -> Service User

Name	Definition	Data Elements (Parts)	Direction
GetSaaUuidRequest	Used by a user to request the UUID of an SAA with the given name and type.	GetSaaUuidRequest	Service User -> SAA SR
GetSaaUuidResponse	Used by the SAA SR Service to return the UUID of an SAA.	GetSaaUuidResponse	SAA SR -> Service User
GetUuidRequest	Used by a user to request a set of unused UUIDs.	GetUuidRequest	Service User -> SAA SR
GetUuidResponse	Used by the SAA SR Service to return a set of unused UUIDs.	GetUuidResponse	SAA SR -> Service User
ValidateSaaRequest	Used by a user to validate a submitted SAA definition.	ValidateSaaRequest	Service User -> SAA SR
ValidateSaaResponse	Used by the SAA SR Service to return whether or not a submitted SAA definition is valid.	ValidateSaaResponse	SAA SR -> Service User
Fault	Used by the SAA SR Service when a call is invalid or an error occurs.	Fault	SAA SR -> Service User

4.2.2.1   Error Codes

The error codes used in response messages from the service are To Be Determined (TBD), but will be listed in TBL 4-6.

TBL 4-6
SAA SR Get Service Message Descriptions

Error Code	Description

4.2.3   Operations

4.2.3.1   SAA SR Put Service Operations

The following tables describe the operations provided by the SAA SR Put Service.

TBL 4-7
insertSaa Operation Description

Operation Name	insertSaa
Description	Allows the user to submit a static definition for a new SAA to the SAA Static Repository.
MEP	In-Out (FAA-STD-066 Message Exchange Pattern Taxonomy)
Precondition	Service consumer, the SAA Project Repository, has a correctly implemented application for creating the SAA insert request. Service provider SAA SR Service has the service consumer identified as an authorized service consumer.
Input	Message InsertSaaRequest.
Output	Message InsertSaaResponse, or SOAP Fault Message.
Effect	The submitted SAA static definition is inserted into the SAA Static Repository.
Faults	TBD, but will be identified from the pre-defined error messages in section 4.2.2.1.

Operation Name	updateSaa
Description	Allows the user to submit a static definition for an existing SAA to the SAA Static Repository.
MEP	In-Out (FAA-STD-066 Message Exchange Pattern Taxonomy)
Precondition	Service consumer, the SAA Project Repository, has a correctly implemented application for creating the SAA update request. Service provider SAA SR Service has the service consumer identified as an authorized service consumer.
Input	Message UpdateSaaRequest.
Output	Message UpdateSaaResponse, or SOAP Fault Message.
Effect	The submitted SAA static definition is updated into the SAA Static Repository.
Faults	TBD, but will be identified from the pre-defined error messages in section 4.2.2.1.

TBL 4-9
insertUnit Operation Description

Operation Name	insertUnit
Description	Allows the user to submit a definition for a new Unit to the SAA Static Repository.
MEP	In-Out (FAA-STD-066 Message Exchange Pattern Taxonomy)
Precondition	Service consumer, the SAA Project Repository, has a correctly implemented application for creating the Unit insert request. Service provider SAA SR Service has the service consumer identified as an authorized service consumer.
Input	Message InsertUnitRequest.
Output	Message InsertUnitResponse, or SOAP Fault Message.
Effect	The submitted Unit definition is inserted into the SAA Static Repository.
Faults	TBD, but will be identified from the pre-defined error messages in section 4.2.2.1.

4.2.3.2 SAA SR Get Service Operations

The following tables describe the operations provided by the SAA SR Get Service.

TBL 4-10
getNewUuid Operation Description

Operation Name	getNewUuid
Description	Allows the user to request a given number of unused UUIDs.
MEP	In-Out (FAA-STD-066 Message Exchange Pattern Taxonomy)
Precondition	Service provider SAA SR Service has the service consumer identified as an authorized service consumer.
Input	Message GetUuidRequest.
Output	Message GetUuidResponse, or SOAP Fault Message.
Effect	A set of unused UUIDs are sent to the service consumer for their use.
Faults	TBD, but will be identified from the pre-defined error messages in section 4.2.2.1.

TBL 4-11
getSaaByUuid Operation Description

Operation Name	getSaaByUuid
Description	Allows the service consumer to get the static definition of the SAA with a given UUID for a given time period.
MEP	In-Out (FAA-STD-066 Message Exchange Pattern Taxonomy)
Precondition	Service provider SAA SR Service has the service consumer identified as an authorized service consumer.
Input	Message GetSaaByUuidRequest.
Output	Message GetSaaByUuidResponse, or SOAP Fault Message.

Effect	The static definition of the requested SAA for the requested time period is returned to the service consumer.
Faults	TBD, but will be identified from the pre-defined error messages in section 4.2.2.1.

TBL 4-12
getSaaNames Operation Description

Operation Name	getSaaNames
Description	Allows the service consumer to get a collection of names for all active and pending SAAs in the Static Repository.
MEP	In-Out (FAA-STD-066 Message Exchange Pattern Taxonomy)
Precondition	Service provider SAA SR Service has the service consumer identified as an authorized service consumer.
Input	Message GetSaaNamesRequest.
Output	Message GetSaaNamesResponse, or SOAP Fault Message.
Effect	A collection of all SAA names in the SAA Static Repository is returned to the service consumer.
Faults	TBD, but will be identified from the pre-defined error messages in section 4.2.2.1.

TBL 4-13
getSaaUUID Operation Description

Operation Name	getSaaUuid
Description	Allows the service consumer to submit key information of an SAA (name and type) to retrieve the SAA's UUID.
MEP	In-Out (FAA-STD-066 Message Exchange Pattern Taxonomy)
Precondition	Service provider SAA SR Service has the service consumer identified as an authorized service consumer.
Input	Message GetSaaUuidRequest.
Output	Message GetSaaUuidResponse, or SOAP Fault Message.
Effect	The UUID of the SAA with the matching key information is returned to the service consumer.
Faults	TBD, but will be identified from the pre-defined error messages in section 4.2.2.1

TBL 4-14
getUnits Operation Description

Operation Name	getUnits
Description	Allows the service consumer to get a collection of all active and pending Unit objects in the SAA Static Repository.
MEP	In-Out (FAA-STD-066 Message Exchange Pattern Taxonomy)
Precondition	Service provider SAA SR Service has the service consumer identified as an authorized service consumer.
Input	Message GetUnitsRequest.
Output	Message GetUnitsResponse, or SOAP Fault Message.
Effect	A collection of all the Unit objects in the SAA Static Repository is returned to the service consumer.
Faults	TBD, but will be identified from the pre-defined error messages in section 4.2.2.1.

TBL 4-15
validateSaa Operation Description

Operation Name	validateSaa
Description	Allows the user to submit a static definition of an SAA and have the SAA SR Service validate it.
MEP	In-Out (FAA-STD-066 Message Exchange Pattern Taxonomy)
Precondition	Service provider SAA SR Service has the service consumer identified as an authorized service consumer.

Input	Message ValidateSaaRequest.
Output	Message ValidateSaaResponse, or SOAP Fault Message.
Effect	The service consumer receives a response saying whether or not the submitted SAA is valid, and if it's not, a reason why it is not valid.
Faults	TBD, but will be identified from the pre-defined error messages in section 4.2.2.1.

4.2.4   Lists of Interfaces

The SAA Project Repository submits static definitions of SAAs to the SAA Static Repository via web service-based message transfer.

Other service consumers submit requests for information related to SAAs to the SAA SR Service via web service-based message transfer.

The SAA SR Notification Service publishes notifications of SAA updates to a JMS topic. Users that subscribe to that JMS topic then receive these notifications. Note: The interface description for the JMS topic is not written, but will be referenced here when it is.

TBL 4-16 below lists the two interfaces being implemented in the SAA SR Service.

TBL 4-16
List of Interfaces

Name	Description	Operations
SaaStaticRepositoryPutPort	Allows the SAA Project Repository to submit SAAs and Units to the SAA SR Service to store in the Static Repository.	insertSaa updateSaa insertUnit
SaaStaticRepositoryGetPort	Allows service consumers to retrieve information on SAAs as well as have the service evaluate a SAA definition they submit to see if it is a valid definition.	getNewUuid getSaaByUuid getSaaNames getSaaUuid getUnits validateSaa
SaaStaticRepositoryNotificationPort	Allows users to subscribe to JMS topics in order to receive notifications that new or modified SAAs are available through the SAA SR Get Service.	

4.3   Service Implementation

The SAA SR Service complies with cited SWIM Segment 1 Compliance standards for web service protocols listed in Section 2.1, Standards for FAA SWIM Program Compliance.

The SAA SR Service will be hosted at the Mike Monroney Aeronautical Center in Oklahoma City. The backup of the system will be hosted at the William J. Hughes Technical Center in Atlantic City. The hardware and its configuration is currently TBD, so the specific end point addresses are also TBD.

The SAA SR Service interface complies with web services interface standards Web Service Definition Language (WSDL), and SOAP. The SAA SR Service transports messages over a HyperText Transfer Protocol with SSL (HTTPS) session.

4.3.1   End Points

The following sections describe the associated interface, communication protocol, messaging protocol, and network address.

4.3.1.1 SAA SR Put Service End Points

4.3.1.1.1 Associated Interface

For all SAA SR Put Service end points, the interface name is SaaStaticRepositoryPutPort.

4.3.1.1.2 Communication Protocol

For all SAA SR Put Service end points, the communications protocol is HTTPS.

4.3.1.1.3 Messaging Protocol

For all SAA SR Put Service end points, the messaging protocol is SOAP.

4.3.1.1.4 Network Address

The network address for the SAA SR Put Service interface is currently TBD.

4.3.1.1.5 End Point-Specific Qualities of Service

TBL 4-17
SAA SR Put Service Quality of Service Parameters

QoS Parameter	Definition	Value
Response Time for insertSaa and updateSaa operations.	A measure of the longest average time period required to complete a service request, from the time the requester invokes the service to the time the requester receives the last byte of the response.	A 95th percentile response time of 10 seconds per airspace volume per timeslice.
Response Time for insertUnit operation.	A measure of the longest average time period required to complete a service request, from the time the requester invokes the service to the time the requester receives the last byte of the response.	A 95th percentile response time of 10 seconds.

4.3.1.2 SAA SR Get Service End Points

4.3.1.2.1 Associated Interface

For all SAA SR Get Service end points, the interface name is SaaStaticRepositoryGetPort.

4.3.1.2.2 Communication Protocol

For all SAA SR Get Service end points, the communications protocol is HTTPS.

4.3.1.2.3 Messaging Protocol

For all SAA SR Get Service end points, the messaging protocol is SOAP.

4.3.1.2.4 Network Address

The network address for the SAA SR Get Service interface is currently TBD.

4.3.1.2.5 End Point-Specific Qualities of Service

TBL 4-18
SAA SR Service Quality of Service Parameters

QoS Parameter	Definition	Value
Response Time for get	A measure of the longest average time period	A 95th percentile response time

QoS Parameter	Definition	Value
services	required to complete a service request, from the time the requester invokes the service to the time the requester receives the last byte of the response.	of 5 seconds.
Response Time for the validateSaa operation	A measure of the longest average time period required to complete a service request, from the time the requester invokes the service to the time the requester receives the last byte of the response.	A 95th percentile response time of 10 seconds per airspace volume per timeslice.

4.3.1.3 SAA SR Notification Service End Points

4.3.1.3.1 Associated Interface

For all SAA SR Notification Service end points, the interface name is SaaStaticRepositoryNotificationPort.

4.3.1.3.2 Communication Protocol

For all SAA SR Notification Service end points, the communications protocol is TCP/IP (with SSL/TLS).

4.3.1.3.3 Messaging Protocol

For all SAA SR Notification Service end points, the messaging protocol is SOAP.

The JMS client must be a FUSE message broker in order to receive updates from the service.

4.3.1.3.4 Network Address

The network address for the SAA SR Notification Service interface is currently TBD.

4.3.1.3.5 End Point-Specific Qualities of Service

TBL 4-19
SAA SR Notification Service Quality of Service Parameters

QoS Parameter	Definition	Value
Response Time	A measure of the longest average time period required to complete a service request, from the time the requester invokes the service to the time the requester receives the last byte of the response.	Responds within 5 seconds or less of an update, insert, or invalidation of an SAA.

AIM SAA SR WSDD – no security
Referenced in FAA SAA Dissemination OGC Pilot

Appendix A.   Accepted Data Elements

The accepted AIXM elements for the SAA SR Service are defined in Appendix C of the AIM SAA Management Web Services IRD.

The accepted ways to define geometries for SAAs in GML are defined in Appendix D of the AIM SAA Management Web Services IRD.