Veeva Systems

Global Account Search

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1. Overview

1.1. Purpose

The purpose of this document is to describe the technical detail design specifications of the Global Account Search Tool developed and packaged into the Veeva CRM Product by Veeva Professional Services. This document will serve as the guide for understanding the Technical components involved in this tool and will also help to get the necessary references to deployment and maintenance operations.

1.2. Intended Audience

This document is intended for the technical staff of any customer that wishes to use the Veeva Global Account Search tool, Veeva Development and support project team, key technical stakeholders, and the Veeva Systems, Inc Professional Services implementation team. It contains a level of detail sufficient for the development and quality assurance team to deliver the project solution, and therefore may be inappropriate for non-technical and/or business users.

1.3. Definitions, Acronyms and Abbreviations

Acronym	Description
SOAP	SOAP (Simple Object Access Protocol). The salesforce.com API uses the SOAP Protocol. SOAP is a language and platform independent messaging specification for access to data using the Hypertext Transport Protocol (HTTP) to move Extensible Markup Language (XML) formatted message bodies over a TCP/IP network.
HTTPS / SSL	The force.com API uses an encrypted HTTP channel (https protocol, TCP port 443). All messages, including user ids, passwords, and data are encrypted using 128-bit encryption. The API uses the same encryption mechanism used by the force.com web application. The force.com API enforces access control using the same mechanism used by the web interface. An API dialog must start with a Login request. The client application must pass a valid salesforce.com username and password in the Login request. The usernames and passwords used by the API are the same usernames and passwords used by the web interface. They are managed using the same administrative pages in force.com.
GAS	Global Account Search
GCF	GAS Criteria Based Filtering
SFDC	Salesforce.com (www.salesforce.com)
ATL	Account Territory Loader (Custom Veeva Territory Alignment API)

2. Technical Overview

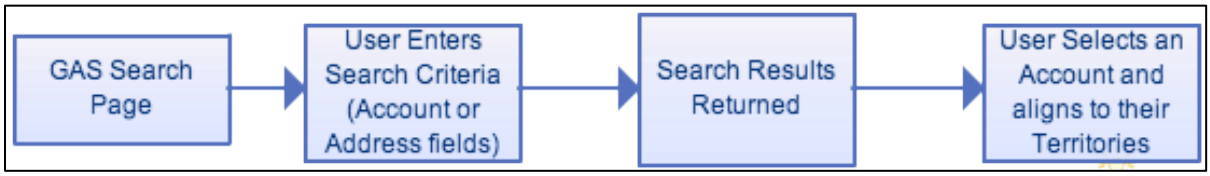
2.1. GAS Overview

To set some background, Veeva use SFDC Territory Management to define access and visibility to Accounts in a Veeva organization. Most organizations will have Home office staff define and assign users (reps/MSLs) to one or more Territories. A user can only see Accounts that are aligned to their territories.

GAS is designed to help the field users (Reps/MSLs/iRep users) pull any account that may not be aligned to them into their territories. At a more granular level, GAS enables the user to do the following:

- Search for Accounts in the entire organization based on commonly used parameters like Name, Address, Specialty etc (search parameters are configurable per requirement)
- Align selected Account(s) to the user's territory or territories (alignment to multiple territories of a rep is supported from version 2.1)

Global Account Search is a fully native Salesforce.com solution and can be accessed in Veeva Online CRM.



2.2. GAS Technical Architecture

GAS is a custom Salesforce.com solution consisting of custom Visualforce controllers, Apex classes and more. The UI consists of a Visualforce page that accepts user input and passes it onto a Custom controller. The Custom controller has logic to:

- Perform search based on Input parameters
- Present the results to the user
- Align the Selected account to the User territory or territories using Veeva ATL mechanism
- Perform Veeva Account Hierarchy based search

GAS used the Veeva ATL mechanism to align territories. ATL is a custom SFDC Object which is linked to a Before and After Insert/Update trigger. The trigger essentially parses the data supplied in the ATL object and aligns the Account with a Territory rowcause of "TerritoryManual". For more details on ATL, please refer to documentation describing ATL and other Territory Management processes found in Veeva Vault.

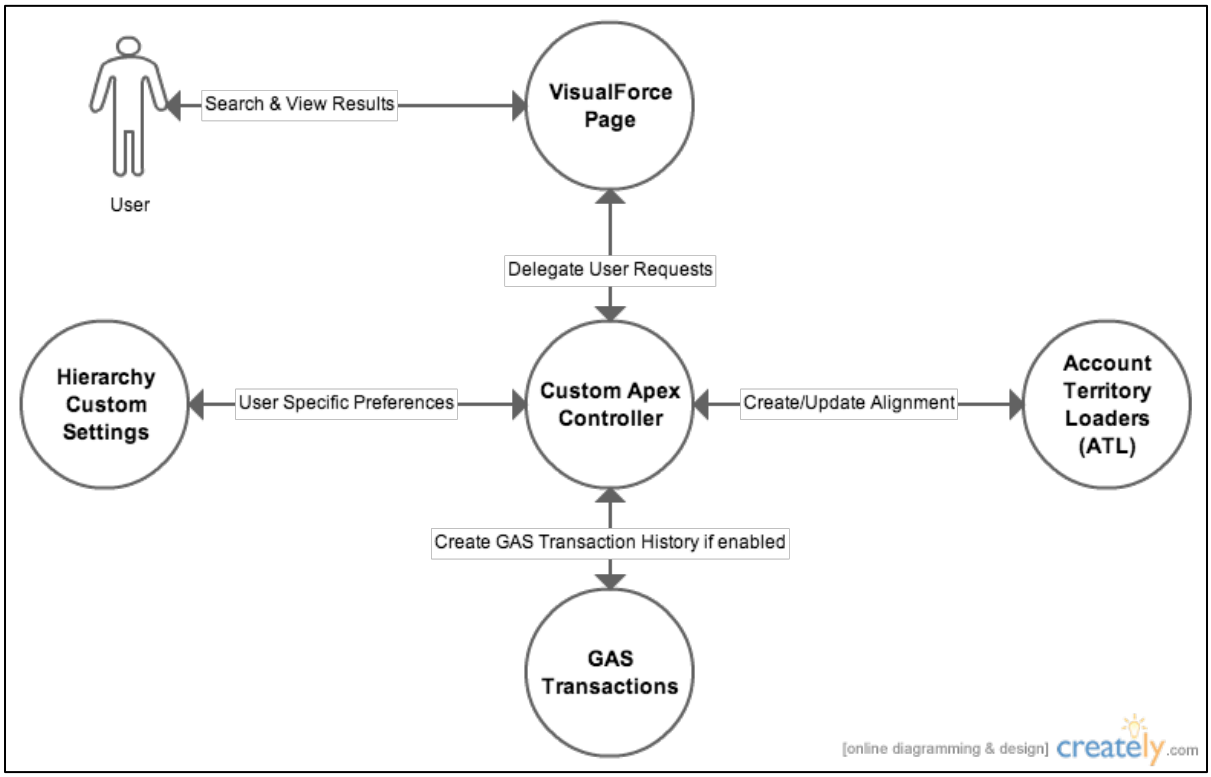
2.3. Role of Custom Settings

Standard Salesforce.com Custom settings play an important role in making the GAS Solution easily configurable to different customer needs. Traditionally, GAS was built using List based Custom settings and Veeva Messages (Message_vod). However, starting with release 2.1, all Custom settings/Veeva messages have been converted to a single Hierarchical Custom Setting.

The GAS custom settings allow the user to configure the following items:

- GAS Input/Search fields
- GAS Output/Result fields
- GAS Error/Informational Messages
- GAS Button Names
- Controls to turn on/off specific GAS features like Criteria based filtering, Align to Multiple Territories etc

Any custom setting field that begins with an API Name of "GAS_Message" usually indicates that it is storing a GAS Message (Input/Output) or Button name (i.e. related to User Interface)



2.4. Latest GAS Features

Release 2.1 additions/updates:

- Criteria-based filtering
    - Allows administrators to setup Org level, Profile Level, User Level and/or Public Group level filters to limit what is displayed in the GAS Results.
    - One may use any valid SOQL where-clause at an Account and/or any child-of-Account (Lookup/MDR) to create filters.
    - Supports use of special Veeva keywords (VOD_SF_USER_ID etc) and intrdouces a new keyword VOD_SF_USER:<fieldName> to allow users to compare data on the logged in User's User object
- Support for Reps aligned to multiple Territories
    - Allows Reps aligned to multiple territories to use GAS
    - Allows Reps to align the Account to All their territories (Custom setting to turn on this feature)
- User/Profile based settings/UI
    - Migrates all legacy GAS Messages and Custom Settings to a single Hierarchy Based custom setting
    - This also adds the ability to display different Input/Output fields to different Users/Profiles if needed.

Detailed documentation on Release 2.1 features can be found here:

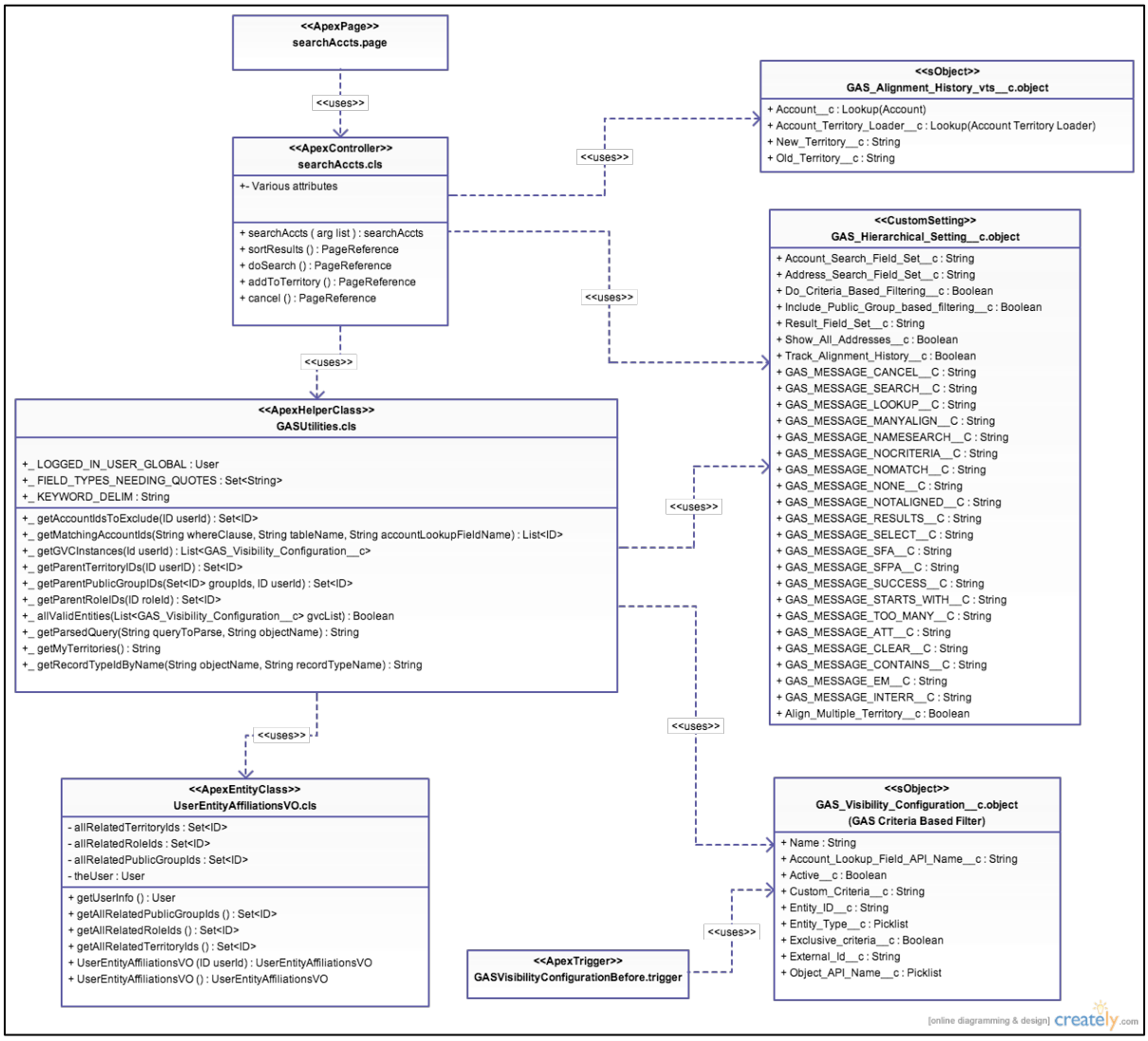
https://github.com/VeevaCodeRepo/Veeva-Global-Account-Search/blob/master/documents/GAS_2_x_Docs/GAS_2_1_Enhancements.pptx?raw=true

Release 2.0 additions/updates:

- Protection for possible security issues, e.g. SOQL Injection
- Improve code structure and readability
- GAS Alignment History tracking feature
- Bug fix: only searches for active Account and Address record types
- Bug fix: duplicate AccountShare alignment

3. Technical Detail Specifications

This section covers the detailed technical design and technical constructs that make up the Veeva GAS Solution, starting with a Class diagram as shown below.



GAS utilized a MVC based architecture. A Visualforce page serves as the View and interacts with the users. A custom Apex controller linked to the Visualforce page works on underlying Model using Delegate and utility classes to render GAS search results. Here is a detailed account of each involved component.

searchAccts.page: This is the Visualforce page that is responsible for collecting user input and showing search results

searchAccts.cls: This is the custom Controller class linked to the searchAccts.page. All requests go via this class.

GASUtilities.cls: A Utility apex class that contains some delegate functions that help modularize some repeatable tasks for the Controller

UserEntitiyAffiliationsVO.cls: This is equivalent to a Valueobject class and holds the Terriotry, Role and Public Group information and hierarchies related to a User (the logged in User in this case). This is particularly useful when using the Criteria based filtering mechanism introduced in GAS 2.1

Additionally, there are Custom Settings and plain old sObjects that are used as indicated in the Class diagram at various points. The Custom Settings store User preferences related to UI as well as properties that control certain behaviors like Criteria-based searching, Multi-Territory alignment etc. Please refer to Appendix A for detailed descriptions.

Appendix A.GAS Custom Settings and sObjects

sObject: GAS_Alignment_History_vts__c		
Field API Name	**Description**	**Type**
Account_Territory_Loader__c	Reference to the ATL record that GAS has modified	Lookup
Account__c	Account that has territory alignment changed	Lookup
New_Territory__c	New territories added to ATL	Text
Old_Territory__c	Old territories from ATL	Text
sObject: GAS_Visibility_Configuration__c		
Account_Lookup_Field_API_Name__c	This is the lookup field's API name that references the Account object in cases where the criteria is specified for a Child object like Address_vod__c. For eg, for Address_vod__c, the value for this field will be Account_vod__c	Text
Active__c	Only Active CVCs are used to build criteria for Available lists. Please note that all validations relating to uniqueness still apply even for inactive records. So you may still not have two CVCs for the same Entity in active and inactive state. This is just convenience to turn on/off for a certain entity something.	Checkbox

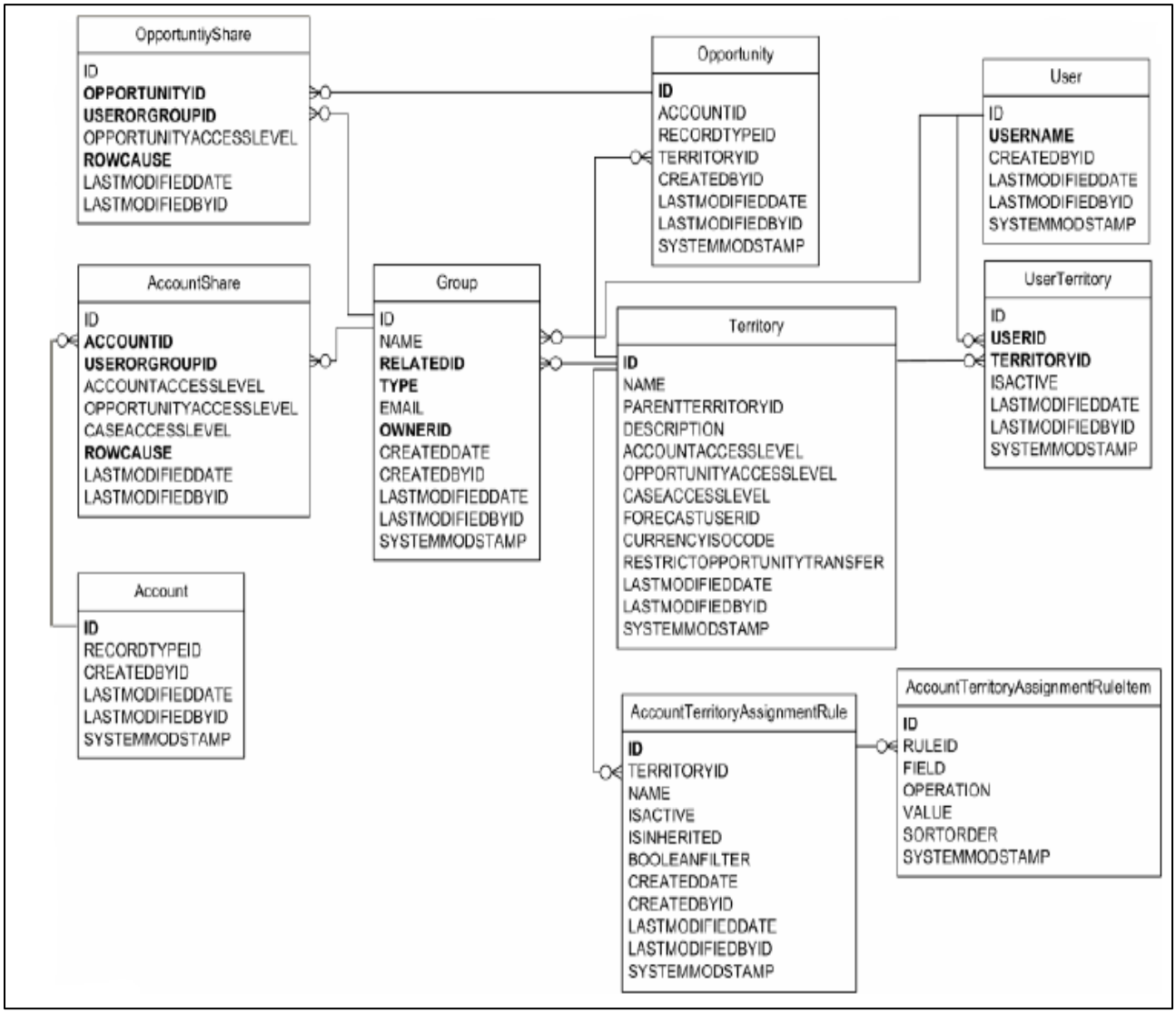
Custom_Criteria__c	Supported special Keywords: VOD_SF_USER_ID - Salesforce ID of the mobile user VOD_SF_PROFILEID - Profile ID of the mobile user VOD_MY_ORGID - Salesforce organization ID VOD_USER_LANG_CD - Value of User.LanuageLocaleKey VOD_MY_TERRITORY - Returns a comma-separated list of the mobile user's territory names (NOT Ids) VOD_RECORDTYPE_ID - Retrieve a RecordType ID by name, e.g. @@VOD_RECORDTYPE_ID:Professional@@ corresponding to Object API Name VOD_SF_USER:<fieldName> - Retrieves the value of the Logged In User's User.fieldName. For eg: User.Country_code__c will return a single quote encapsulated 'US' from the Logged in User's User Record	TextArea
Entity_ID__c	Auto-populated to 18 character SFDC ID of the Entity name	Text
Entity_Type__c	Specifies Entity type - each entity may only have one record	Picklist
Exclusive_criteria__c	If checked, then this condition is "AND"ed with other CVCs that may exist for the logged in User. Only works with Custom Criteria, i.e., "Use Custom Criteria". is checked/true	Checkbox
External_Id__c	Entity_Id__c + Object_API_Name__c	Text
Name	Name of the Entity	string
Object_API_Name__c	The Object API name on which the custom criteria will be applicable	Picklist
CustomSetting: GAS_Hierarchical_Setting__c		
Account_Search_Field_Set__c	List of fields, delimited by string, to use as search fields for the Account. Sample value: Name,FirstName,LastName,Specialty_1_vod__c.	TextArea

Address_Search_Field_Set__c	List of fields, delimited by commas, of Address fields to search on. Sample value: Name,City_vod__c,State_vod__c,Zip_vod__c,Phone_vod__c	TextArea
Align_Multiple_Territory__c	If checked, align an Account to multiple territories if the user is in more than one territory	Checkbox
Do_Criteria_Based_Filtering__c	If unchecked, criteria based filtering is completely turned off	Checkbox
GAS_Message_ATT__c		TextArea
GAS_Message_CLEAR__c		Text
GAS_Message_CONTAINS__c		Text
GAS_Message_Cancel__c	Text for GAS Cancel Button	Text
GAS_Message_EM__c		Text
GAS_Message_INTERR__c		TextArea
GAS_Message_Lookup__c		Text
GAS_Message_MANYALIGN__c		TextArea
GAS_Message_NOMATCH__c		TextArea
GAS_Message_NONE__c		Text
GAS_Message_NOTALIGNED__c		TextArea
GAS_Message_NameSearch__c		TextArea
GAS_Message_NoCriteria__c		TextArea
GAS_Message_RESULTS__c		Text
GAS_Message_SELECT__c		TextArea
GAS_Message_SFA__c		TextArea
GAS_Message_SFPA__c		TextArea
GAS_Message_STARTS_WITH__c		Text
GAS_Message_SUCCESS__c		TextArea
GAS_Message_Search__c	GAS Search Button text	Text
GAS_Message_TOO_MANY__c		TextArea
Id		id
Include_Public_Group_based_filtering__c	If checked, then Public Group Entity type filtering is enabled. Since this feature is resource intensive and involves loading up the Territory tree, Role tree and Public Group tree for EVERY GAS Search, it is turned off by default. Should only be turned ON if Public Groups based filtering is being used	Checkbox
IsDeleted		boolean
IsLocked		boolean
LastModifiedById		reference
LastModifiedDate		datetime
MayEdit		boolean
Name		string

Result_Field_Set__c	List of fields, delimited by comma, to display in search results. If any of these are Address fields, they must be prefixed by 'ADD.'. Sample value: Name,ADD.Name,ADD.City_vod__c,ADD.State_vod__c,ADD.Zip_vod__c,Specialty_1_vod__c,ADD.Primary_vod__c	TextArea
SetupOwnerId		reference
Show_All_Addresses__c	If checked, display all addresses for an Account; otherwise, only display primary address. If no primary address, display the first one found.	Checkbox
SystemModstamp		datetime
Track_Alignment_History__c	If checked, Account alignment changes will be recorded in the custom object GAS_Alignment_History_vts__c	Checkbox

Appendix B.Data Model – Territory

The following diagram shows the entity relationship for the objects related to territory management.



Appendix C. Revision History

Date	Revised By	Description of Modifications