



ITINERARY PLANNER TECHNICAL INTEGRATION GUIDE - INDUSTRY

Version 1.0

REVISION HISTORY

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1 Introduction

1.1 Purpose

This document aims to provide users with the information needed to leverage on the Itinerary Planner APIs, including a suggested integration process flow.

1.2 Pre-requisite for Partners

This document assumes that the party integrating to the TIH Itinerary Planner has the pre-requisite knowledge and experience required to do the necessary integration using the technologies listed below:

1. OAuth 2.0 Protocol and process
2. REST APIs

The Itinerary Planner Service leverages on the use of the VS Account Service, thus as part of the pre-requisite, it is required that the VS Account service be integrated first.

1.3 Itinerary Planner On-Boarding

Partners who wish to leverage on the TIH Itinerary Planner should register for a TIH Business or Developer account and request for the both the VS Account and Itinerary Planner Service through the procedure:

1. The partner shall request for the VS Account and Itinerary Planner Service by submitting the [application form](#) as detailed in the [VS Account Technical Integration Guide](#), under the section on VS Account Partner On-boarding. When filling up the application form, please ensure that the VS Account service and Itinerary Planner Service have been checked.
2. The partner shall submit all necessary information as may be required by STB in connection with their application for the VS Account service. By doing so, the partner warrants that any information, which they have provided in order to obtain the API, is accurate and complete for the duration of their access and/or use of the API. If there is any update to the information provided, they are expected to inform TIH Helpdesk at (stb_tih@stb.gov.sg) immediately.
3. By requesting for the VS Account and Itinerary Planner Service, the partner unconditionally agree to be bound by TIH Terms of Use, which may be updated and amended from time to time at STB's sole and absolute discretion.

4. Once the request has approved, an email with the ClientId and ClientSecret will be sent to the partner's email address and application administrator's email address.
5. Partners are then able to integrate the Itinerary Planner APIs into specified application(s) by following the specifications captured in this document.

2 API Interface Overview

The Itinerary Planner APIs are RESTful web service based on representational state transfer (REST) technology, that uses HTTP requests to access data from the TIH Itinerary Planner Service System. The APIs leverages the OAuth 2.0 industry-standard protocol for authorisation and authentication of the VS Account system consumers.

This section provides the overview of the available methods and formats to access the data via the APIs.

2.1 Interfacing with VS Account and Itinerary Planner Service

With reference to the VS Account Integration Guide, before accessing any of the VS Account and Itinerary Planner service APIs, do note the reference to the following:

Reference	Domain URL
<i>OAuth domain</i>	account.visitsingapore.com
<i>VSAPI domain</i>	api.visitsingapore.com
<i>TIHAPI domain</i>	tih-api.stb.gov.sg

A valid access token is required to access any of the VS Account and Itinerary Planner Service APIs.

Do note that the apart from the Recommend Itineraries API, access to the APIs will required that the 3rd party application user be authenticated.

Please refer to the [VS Account Integration Guide](#), section 3.1.3 on OAuth Authentication Process Flow.

2.2 API Response Format

The service APIs only support the JSON format. The selection of the response format is via the “Accept” request header and the APIs will respond with a JSON response.

GET /service/v1/itineraries

Accept: application/json

ContentType: application/x-www-form-urlencoded

Host: [TIHAPI_domain]

Authorization: BearerToken <access_token>

Date: Thu, 26 September 2019 21:04:25 +0800

Format	Accept header
JSON	application/json

JSON Response

```
{
  "status": {
    "statusCode": 200,
    "statusText": "OK"
  },
  "data": {
    "uuid": "string value",
    "attribute": "value",
    ...
  }
}
```

2.3 Request Methods

The following are the supported request methods for the APIs available for partners:

Method	Message Body Encoding	Remarks
GET	none	Retrieve resource data from server. No change shall be made on data
POST/PUT	application/x-www-form-urlencoded	Send resource data to server.
DELETE	none	Delete resource data from the server.

2.4 Status Codes

Each API will return a status for each request based on HTTP Response Codes. The list of possible status codes is as defined in the table below:

Code	Message	Remarks
200	OK	No error. The request to retrieve or update the resource was successful.
201	CREATED	Creation of a resource was successful.
202	ACCEPTED	Updating of a resource is successful.
400	BAD REQUEST	Invalid request URI or header, or unsupported non- standard parameters.
401	UNAUTHORIZED	Authorization required. Authorization header was invalid format. Authorization token was invalid.
404	NOT FOUND	Resource not found.
500	INTERNAL SERVER ERROR	Internal error. Default code of unrecognized error.
503	SERVICE TEMPORARILY UNAVAILABLE	Service temporarily unavailable.

2.5 Available API End Points

The available API End Points for partners include, but not limited to, the following:

Please reference the [VS Account Integration Guide](#) or visit the [developer portal](#) links by clicking on the API Name provided for detailed information on the APIs.

OAuth Authentication APIs

For a listing of all OAuth APIs related to the VS Account, please see the following Developer Portal Reference URL, <https://tih-dev.stb.gov.sg/visit-singapore-account-oauth-api/apis>

OAuth Authentication APIs		
API Name	Request Method	Request URL
Get Access Token	POST	https://[OAuth_domain]/sso/oauth/accessToken
Refresh Access Token	POST	https://[OAuth_domain]/sso/oauth/accessToken

User Account Related APIs

For a listing of all User Account APIs related to the VS Account, please see the following Developer Portal Reference URL, <https://tih-dev.stb.gov.sg/visit-singapore-account-api/apis>

User Account Related APIs		
API Name	Request Method	Request URL
Get User Profile	GET	https://[VSAPI_domain]/service/v1/user/profile
User Logout	POST	https://[VSAPI_domain]/service/v1/user/logout

For a listing of all User Account APIs related to the VS Account, please see the following Developer Portal Reference URL, <https://tih-dev.stb.gov.sg/itinerary-planner-api/apis>

Itinerary Planner APIs		
API	Request Method	Request URL
Create Itineraries	POST	https://[TIHAPI_domain]/service/v1/itineraries
Add Participants	POST	https://[TIHAPI_domain]/service/v1/itineraries/{itineraryUuid}/participants/add
View Itineraries	GET	https://[TIHAPI_domain]/service/v1/itineraries/{itineraryUuid}
Update Itineraries	PUT	https://[TIHAPI_domain]/service/v1/itineraries/{itineraryUuid}
List Itineraries	GET	https://[TIHAPI_domain]/service/v1/itineraries
Remove Participants	POST	https://[TIHAPI_domain]/service/v1/itineraries/{itineraryUuid}/participants/remove
Leave Itineraries	POST	https://[TIHAPI_domain]/service/v1/itineraries/{itineraryUuid}/leave
Delete Itineraries	DELETE	https://[TIHAPI_domain]/service/v1/itineraries/{itineraryUuid}
Recommend Itineraries	GET	https://[TIHAPI_domain]/service/v1/itineraries/recommendations

3 Itinerary Planner APIs

The Itinerary Planner Service is to be designed as a backend service offering that will consist of a suite of APIs that allows 3rd party applications to integrate with, allowing their application users to create and manage itineraries. The 3rd party application users can invite friends and family to co-create/co-plan their itineraries to Singapore.

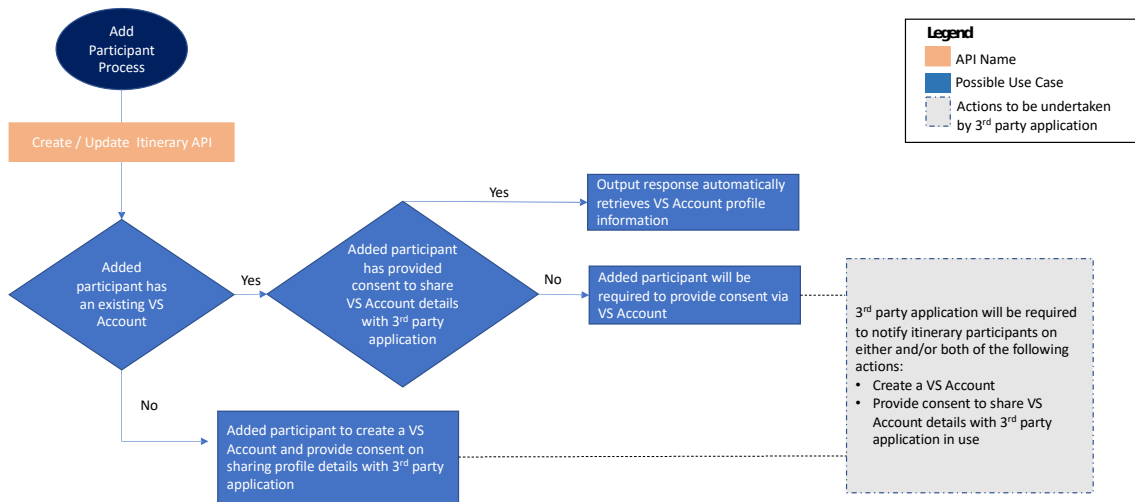
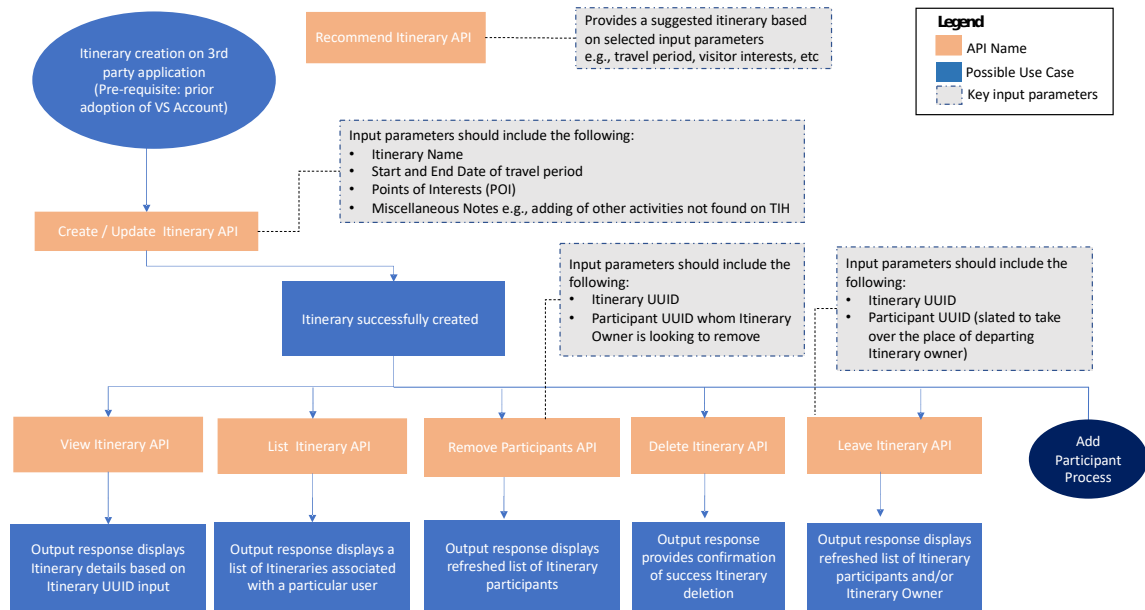
When using the Itinerary Planner Service APIs, please note the following:

1. As a pre-requisite, a valid VS Account is required when requesting any of the Itinerary Planner Service API, except for the Recommend Itineraries API.
2. There are the following user roles defined for itineraries,
 - a. Owner – 3rd party application user who owns the itineraries
 - b. Participants – 3rd party application users who have an existing VS account and have been invited to participate in the planning of the itineraries
 - c. Invites – People who have been invited to participate in the planning of the itineraries but do not have a VS account
3. The user details of a participant will only be made available in the responses of Itinerary Planner Service APIs that provide details of an itinerary (e.g. View Itineraries, etc) if they have granted access to 3rd party application (consent page) from VS Account portal.
4. Itineraries are private and can only be viewed/modified by its owner and/or authorised participants of the itineraries
5. Both the owner and participants can invite others to participate in the planning of an itinerary.
6. The itineraries can be scheduled or unscheduled.
 - a. Scheduled – the start date and end date of the itinerary is clearly defined and items in the itinerary will be organised into the respective dates (days)
 - b. Unscheduled – no dates defined; items added into the itinerary will be organised as a single listing
7. Itineraries can only be deleted by its owner.
8. A participant can leave an itinerary that he/she is a part of.
9. The owner of an itinerary cannot leave the itinerary unless there are other participants associated to the itinerary. The owner will have to delegate participants of the itinerary as the new owner upon leaving the itinerary.
10. The owner of an itinerary must delete the itinerary if he/she wants to leave it when there are no other participants associated to the itinerary.

Defined in the table below is a summary of the access rights for each defined user role.

Action	Owner	Participants
Create Itineraries	✓	✗
Add Participants	✓	✓
View Itineraries	✓	✓
Update Itineraries	✓	✓
List Itineraries	✓	✓
Remove Participants	✓	Only those they have invited
Leave itineraries	Only if there are other participants (by nominating a new owner)	✓
Delete Itineraries	✓	✗

3.1 Overall Itineraries Flow Chart



3.2 Create Itineraries API

Developer Portal Reference URL:

<https://tih-dev.stb.gov.sg/itinerary-planner-api/apis/post/itineraries>

The Create Itineraries API allows the creation of an itineraries based on start and end date of the trip. Itineraries can be created with the name of the itineraries as a mandatory input field.

A valid VS account access token of the 3rd party application user will need to be added in the Request Headers when invoking this API.

The Create Itineraries API will also allow participants and Points of Interests (POIs) to be added. When inviting the participants to an itineraries, the 3rd party client applications will be responsible for triggering the email to users that have been invited to the itineraries, upon calling the API. A sample template has been provided below.

```
Hi,  
  
You have been invited to customise your Singapore experience.  
  
If you already have a Visit Singapore Account, kindly login to start co-planning your Itinerary.  
  
Alternatively, kindly register for a Visit Singapore Account here, before embarking on your Itinerary planning experience.  
  
Regards,  
<Insert Application Name>
```

Upon successful execution of this API, the itineraries are created in the TIH system. The 3rd party application user that created the itineraries will take on the the owner role.

Itineraries that are created by each 3rd party client application (E.g. MyExampleApplication) can only be accessible from the associated 3rd party client application (only accessible by MyExampleApplication).

The list of participants of an itineraries for a 3rd party client application, will only show information of users that have explicitly given consent to the associated application.

3.3 Add Participants API

Developer Portal Reference URL:

<https://tih-dev.stb.gov.sg/itinerary-planner-api/apis/post/itineraries/%7BitineraryUuid%7D/participants/add>

The Add Participants API will allow authorised users of the itineraries to add new participants to it. When accessing the Add Participants API, a valid itinerary identifier (UUID) should be provided together with a valid VS account access token.

The VS account access token of the 3rd party application user should be that of either the owner or an authorised participants of the itineraries and needs to be added in the Request Headers when invoking this API.

When inviting a someone to itineraries, the 3rd party client applications will be responsible for triggering the email to person that has been invited to the itineraries, upon calling the API.

Upon successful execution of this API, the itineraries are updated in the TIH system and the role of the newly added person is updated either as “Participant” or “Invite” based on the two possible scenarios below.

Scenario A - Invited person has a VS Account

The person will be classified as a “Participant”.

- i. If the invited participants have a VS account and has previously granted access to 3rd party application (consent page) from VS Account portal, they are immediately added to the itineraries as a participants and receive a notification in the VS Account portal.
- ii. If the invited participants have a VS Account but has not granted access to respective 3rd party application (consent page), he/she will receive a notification in the VS Account Portal. He/she will not be able to access the 3rd party application and his/her user details will not be available in the output response of any Itinerary Planner Service APIs until access is granted to the 3rd party application.

Scenario B - Invited person does not have an existing VS Account

The person will be classified as an “Invite”.

- i. The 3rd party application should trigger an invitation email to the invited person’s email address.
- ii. Upon successful creation of a VS Account and granting of access to the 3rd party application, the person will be classified as a “Participant”, as per Scenario A (i).

3.4 View Itineraries API

Developer Portal Reference URL:

<https://tih-dev.stb.gov.sg/itinerary-planner-api/apis/get/itineraries/%7BitineraryUuid%7D>

The View Itineraries API allows 3rd party application users to view the details of a selected itineraries. When accessing the Remove Participants API, a valid itinerary identifier (UUID) should be provided together with a valid VS account access token.

The VS account access token of the 3rd party application user should be that of either the owner or an authorised participants of the itineraries and needs to be added in the Request Headers of this API.

For a 3rd party client application, the response will only show information of participants that have granted access to the particular 3rd party application. Upon successful execution of this API, the itineraries and participantsdetails are retrieved.

3.5 Update Itineraries API

Developer Portal Reference URL:

<https://tih-dev.stb.gov.sg/itinerary-planner-api/apis/put/itineraries/%7BitineraryUuid%7D>

The Update Itineraries API will allow an authorised user of the itineraries to edit its details by adding and remove places of interest to visit. When accessing the update itineraries API, a valid itinerary identifier (UUID) should be provided together with a valid VS Account access token.

The VS account access token of the 3rd party application user should be that of either the owner or an authorised participant of the itineraries and needs to be added in the Request Headers when invoking this API.

The list of participants of itineraries for a 3rd party client application, will only show information of participants that have explicitly granted access to 3rd party application. When inviting a participants to itineraries, the 3rd party client applications will be responsible for triggering the email to users that have been invited to the itineraries, upon calling the API.

The update itineraries API will not allow the removal of participants from an itineraries. To remove a participants, please see the [Leave Itineraries API](#) or [Remove Participants API](#) section of the document.

3.6 List Itineraries API

Developer Portal Reference URL:

<https://tih-dev-uat.stb.gov.sg/itinerary-planner-api/apis/get/itineraries>

The List Itineraries API will display the list of itineraries that the 3rd party application user has created or is a participants of. The list of participants of itineraries for a 3rd party client application will only show information of 3rd party application users that have granted access to the specific 3rd party application requesting the API.

A valid VS account access token of the 3rd party application user will need to be added in the Request Headers when invoking this API.

3.7 Remove Participants API

Developer Portal Reference URL:

<https://tih-dev.stb.gov.sg/itinerary-planner-api/apis/post/itineraries/%7BitineraryUuid%7D/participants/remove>

The Remove Participants API will allow a participant of the itineraries to remove participants from it. When accessing the Remove Participants API, a valid itinerary identifier (UUID) should be provided together with a valid VS account access token.

The VS account access token of the 3rd party application user should be that of either the owner or an authorised participants of the itineraries and needs to be added in the Request Headers when invoking this API.

Once participants are removed from an itineraries, he/she will be disassociated from the itineraries and will not be able to access the itineraries information.

3.8 Leave Itineraries API

Developer Portal Reference URL:

<https://tih-dev.stb.gov.sg/itinerary-planner-api/apis/delete/itineraries/%7BitineraryUuid%7D>

The Leave Itineraries API will allow participants to leave itineraries they are associated with. When accessing the Leave Itineraries API, a valid itinerary identifier (UUID) should be provided together with a valid VS account access token.

If the 3rd party application user is the owner of the itineraries, he/she will have to delegate another participants of the itineraries (if present) as the new owner of the itineraries. A valid itinerary identifier (UUID) should be provided together with a valid VS account access token and the unique identifier (UUID) of the participant nominated as the new owner will have to be provided as part of the API request.

The owner of itineraries must delete the itineraries (Delete Itineraries API) if he/she wants to leave it when there are no other participants associated to the itineraries.

The VS account access token of the 3rd party application user should be that of either the owner or an authorised participants of the itineraries and needs to be added in the Request Headers when invoking this API.

3.9 Delete Itineraries API

Developer Portal Reference URL:

<https://tih-dev.stb.gov.sg/itinerary-planner-api/apis/delete/itineraries/%7BitineraryUuid%7D>

The Delete Itineraries API will allow the owner of the itineraries to delete it. When accessing the Delete Itineraries API, a valid itinerary identifier (UUID) should be provided together with a valid VS account access token that belongs to the owner of the itineraries.

The VS account access token needs to be added in the Request Headers when invoking this API.

Only the owner of the itineraries can delete it. When the itineraries are deleted, the 3rd party application should trigger an email to all participants (if any) of the itineraries to notify them of its deletion.

3.10 Recommend Itineraries API

Developer Portal Reference URL:

<https://tih-dev.sb.gov.sg/itinerary-planner-api/apis/get/itineraries/recommendations>

The Recommend Itineraries API will return a recommended itineraries based on inputs from a 3rd party application such as,

- i. Start date & End Date of Travel
- ii. Arrival & Departure time
- iii. Interests
- iv. Nationality

The recommended itineraries will consist of a proposed schedule of daily activities, including events & attractions, dining locations for each day across the duration of the travel period.