

Real-Time Project Exercise – MuleSoft Transport Management

Steps to be followed

- Understand Requirement
- Create RAML
- Develop API using RAML
- Testing
- Munit Testing
- Code Check-in

Objective of this exercise

- To simulate a real world scenario, where a solution architecture document will be handed down to the development team to build & implement.
- Make use of MuleSoft out of the box capabilities (as much as possible) to come out with a solution to address the design problems addressed in the use case.
- Include previous best practices experience when coming out with the solution.
- Make use of Design Center to create RAML projects and design RAML specification base RAML best practices based on the business scenario given.
- Organize and create the mule projects based on the business scenarios, and solution described in this document.
- Creating mule message flows, making use of mule components and connectors. implement a solution based on the scenario and specifications given in this document.
- M-unit test is created to test each of the possible scenarios.
- Test scripts creation to test the end point using testing tools such as Postman / Soap UI (if needed).
- Demo the working example at the end. During the presentation, outline in detail what you are trying to solve in your Mule project and the approach to resolve it.
- Extend and enhance your application in real-time.

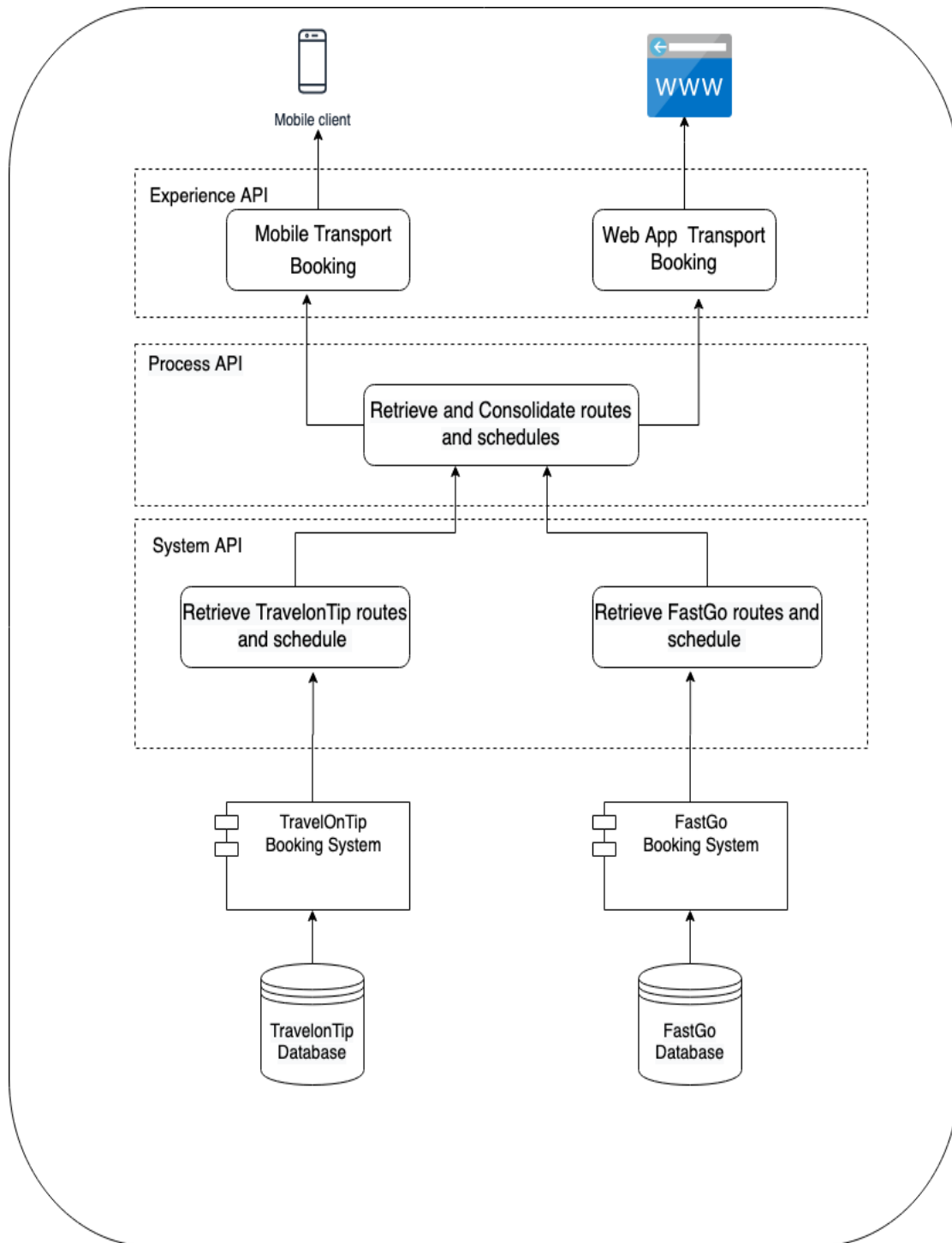
Business Scenario

TripEasy is a startup company providing a platform to perform booking services for land, air and sea transport across the world.

This platform will enable customers to query location routes and the departure schedule from multiple transport providers, and make booking directly to the platform. The platform will enable the customer to make payments, and issues tickets to the customers. Customer also will be able

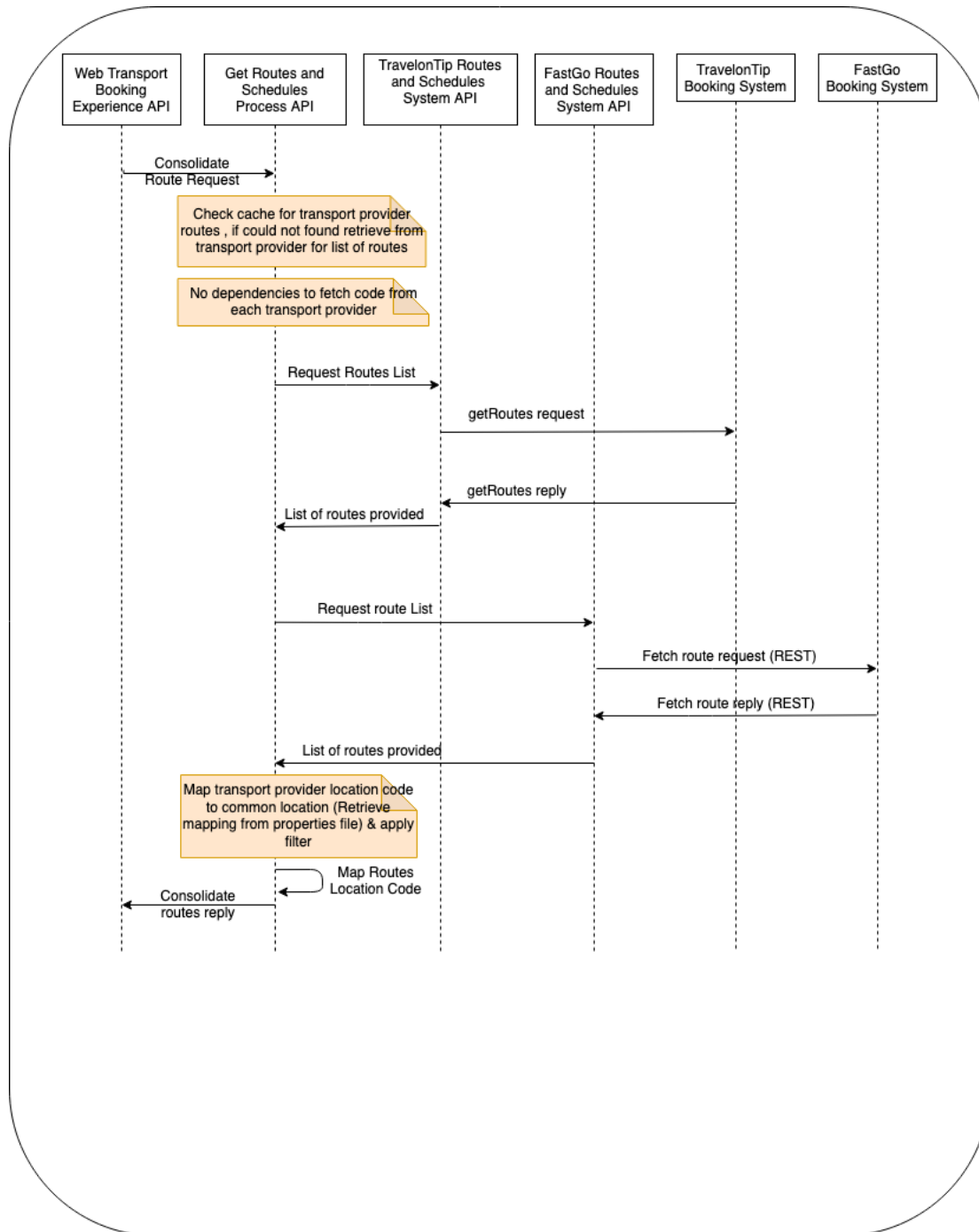
This platform will connect to the respective transport providers back end systems, to query for the available routes and schedules and make purchases, track their booking and make changes to their bookings. This platform will also provide the capability for the regulatory agencies to manage their bookings, and all updates will be reflected to the transport provider back-end system.

API Landscape

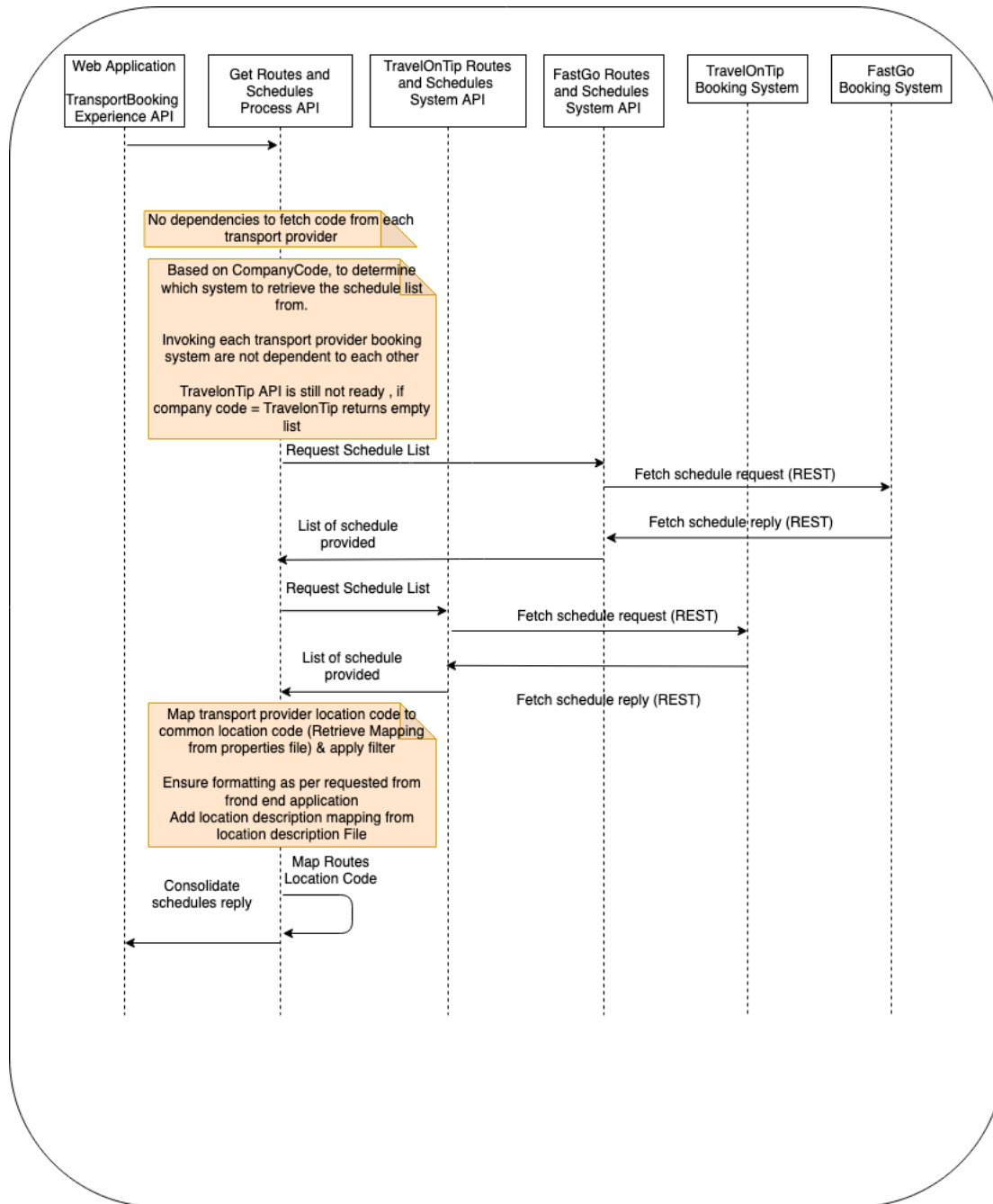


Sequence Diagram Web Application

Get Routes

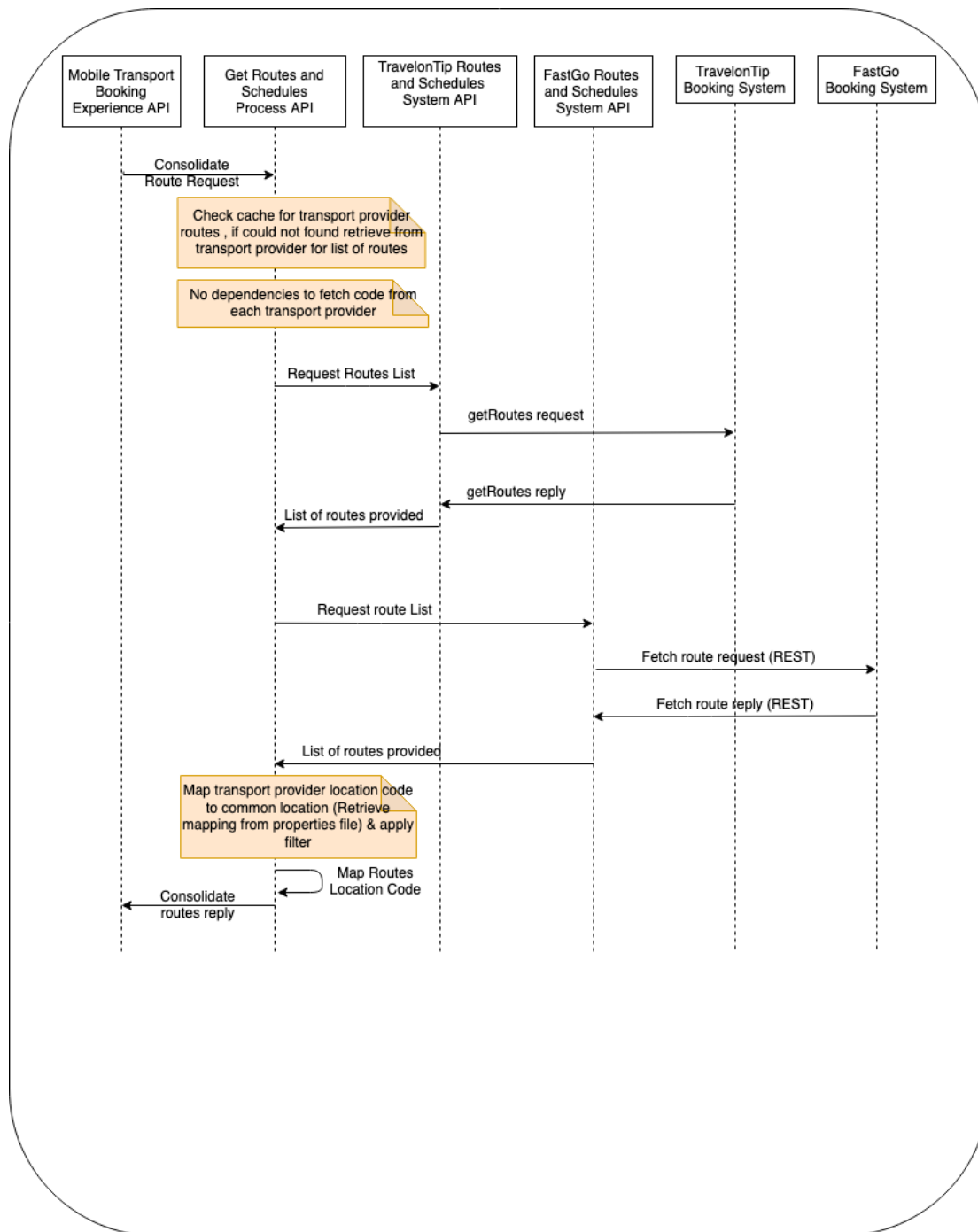


Get Schedules

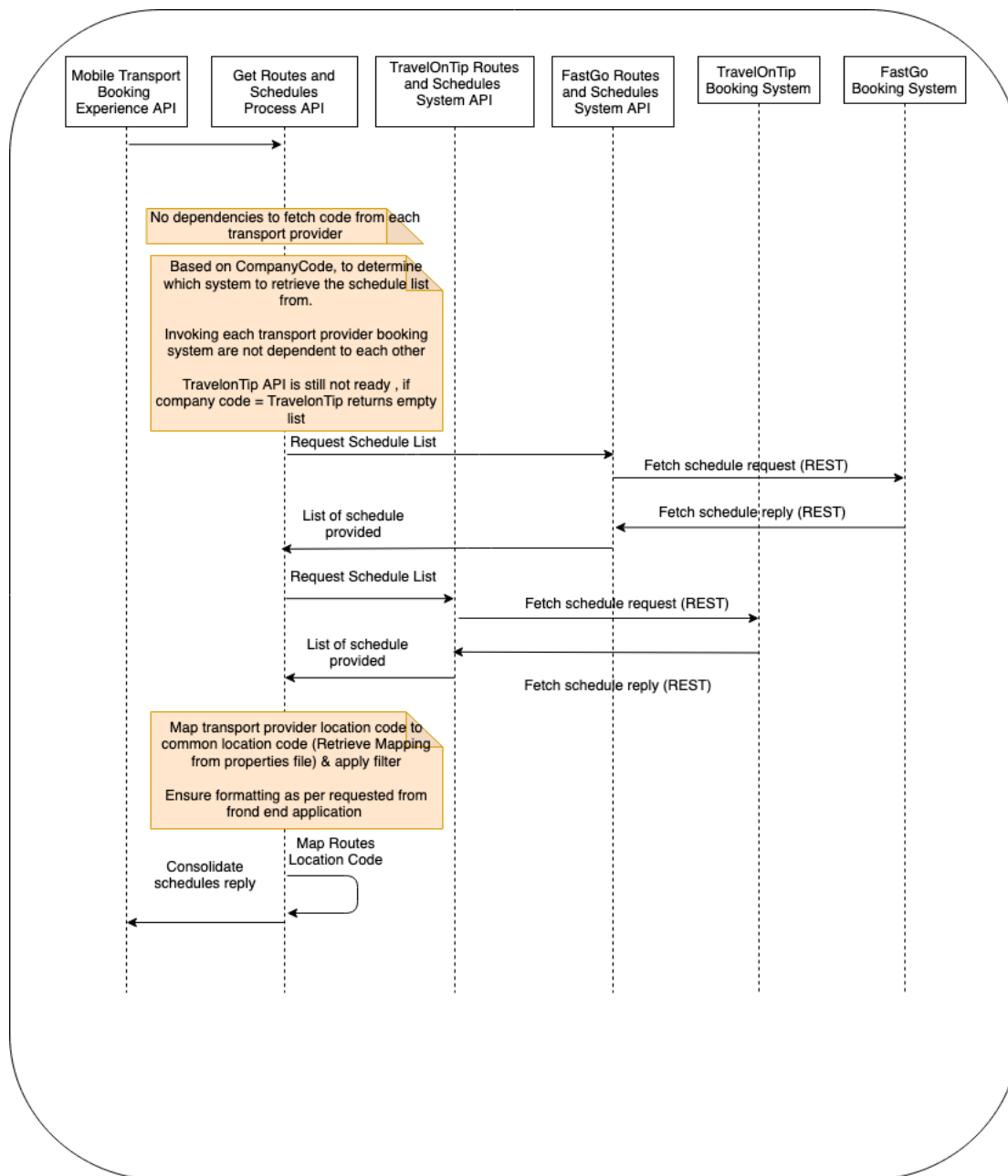


Sequence Diagram Mobile Application

Get Routes



Get Schedules



Experience API : Web Application

Retrieve Consolidated Routes

Version : 1.0.0

Resource : Routes

Method : GET

URL : /booking/{transportType}/routes

Objective :

- To consolidate routes from multiple transport providers. Retrieval from the transport providers need to parallel as there is no dependencies between both of the transport providers.

Input

Header

Field Name	Field Rule	Mandatory	Type
transactionId	Used for logging and tracking purpose. Example: hdsfhjdh-jxbv859-sjdf7643-3746bbd	Y	String

Query Parameter

Field Name	Field Rule	Mandatory	Type
companyName		N	String
departureLocation		N	String
destinationLocation		N	String

Output

Type: Application/json

Output message for getRoutes (Experience API)

```
[
{
  "companyCode": "TransNational",
    "originLocation": {
"locationCode": "BEN-SG", "locationDesc":
    "Beauna Vista Singapore"
},
    "destinationLocation": {
      "locationCode": "KLG-MY",
      "locationDesc": "Klang
      Malaysia"
    }
  },
{
  "companyCode": "TransNational",
    "originLocation": {
"locationCode": "BEN-SG", "locationDesc":
    "Beauna Vista Singapore"
},
    "destinationLocation": {
      "locationCode": "KLG-MY",
      "locationDesc": "Klang
      Malaysia"
    }
  },
{
  "companyCode": "TransNational",
    "originLocation": {
"locationCode": "BEN-SG", "locationDesc":
    "Beauna Vista Singapore"
```

Retrieve Consolidated Schedules

Version : 1.0.0

Resource : Schedules

Method : GET

URL : /booking/{transportType}/schedules

Objective :

- To consolidate schedules from multiple transport providers. Retrieval from the transport providers need to parallel as there is no dependencies between both of the transport providers.

Input

Header

Field Name	Field Rule	Mandatory	Type
transactionId	If provided, only retrieve the list of routes from this transport provider Example: hdsfhjdh-jxbv859-sjdf7643-3746bbd	Y	String

Query Parameter

Field Name	Field Rule	Mandatory	Type
companyName		N	String
departureLocation		N	String
destinationLocation		N	String
requestTimezone	The time zone where request is originating from. E.g. 0800	N	String

Output

Type: Application/json

Output message for getSchedules (Experience API)

```
[
  {
    "companyName": "TravelOnTip",
    "availableSeats": 20,
    "departureDateTime": "2019-04-30T16:41:41",
    "travelRoute": {
      "destinationLocation": {
        "locationCode": "KLG-MY",
        "locationDesc": "Klang Malaysia"
      },
      "originLocation": {
        "locationCode": "BEN-SG",
        "locationDesc": "Beauna Vista Singapore"
      }
    }
  },
  {
    "companyName": "FastGo",
    "availableSeats": 30,
    "departureDateTime": "2019-04-30T18:41:41",
    "travelRoute": {
      "destinationLocation": {
        "locationCode": "KLG-MY",
        "locationDesc": "Klang Malaysia"
      },
      "originLocation": {
        "locationCode": "BL-SG",
        "locationDesc": "Beauna Vista Singapore"
      }
    }
  }
]
```

Experience API : Mobile Application

Retrieve Consolidated Routes

Version : 1.0.0

Resource : Routes

Method : GET

URL : /booking/{transportType}/routes

Objective :

- To consolidate routes from multiple transport providers. Retrieval from the transport providers need to parallel as there is no dependencies between both of the transport providers.

Input

Header

Field Name	Field Rule	Mandatory	Type
transactionId	Used for logging and tracking purpose. Example: hdsfhjdjdh-jxbv859-sjdf7643-3746bbd	Y	String

Query Parameter

Field Name	Field Rule	Mandatory	Type
companyName		N	String
departureLocation		N	String
destinationLocation		N	String

Output

Type: Application/json

Output message for getRoutes (Experience API)

```
[
  {
    "companyCode": "TransNational",
    "originLocation": {
      "locationDesc": "Beauna Vista Singapore"
    },
    "destinationLocation": {
      "locationDesc": "Klang Malaysia "
    }
  },
  {
    "companyCode": "TransNational",
    "originLocation": {
      "locationDesc": "Klang Malaysia"
    },
    "destinationLocation": {
      "locationDesc": "Beauna Vista Singapore"
    }
  },
  {
    "companyCode": "TransNational",
    "originLocation": {
      "locationDesc": "Beauna Vista Singapore"
    },
    "destinationLocation": {
      "locationDesc": "Klang Malaysia"
    }
  }
]
```

Retrieve Consolidated Schedules

Version : 1.0.0

Resource : Schedules

Method : GET

URL : /booking/{transportType}/schedules

Objective :

- To consolidate schedules from multiple transport providers. Retrieval from the transport providers need to parallel as there is no dependencies between both of the transport providers.

Input

Header

Field Name	Field Rule	Mandatory	Type
transactionId	If provided, only retrieve the list of routes from this transport provider Example: hdsfhjdh-jxbv859-sjdf7643-3746bbd	Y	String

Query Parameter

Field Name	Field Rule	Mandatory	Type
companyName		N	String
departureLocation		N	String
destinationLocation		N	String
requestTimezone	The time zone where request is originating from. E.g. 0800	N	String

Output

Type: Application/json

Output message for getSchedules (Experience API)

```
{
  "departureSchedules":[
    {
      "companyName":"TravelOnTip",
      "availableSeats":20,
      "departureDateTime":"2019-04-30T16:41:41",
      "travelRoute":{
        "destinationLocation":{
          "locationDesc":"Beauna Vista Singapore"
        },
        "originLocation":{
          "locationDesc":"Klang Malaysia"
        }
      }
    },
    {
      "companyName":"FastGo",
      "availableSeats":30,
      "departureDateTime":"2019-04-30T18:41:41",
      "travelRoute":{
        "destinationLocation":{
          "locationDesc":"Klang Malaysia"
        },
        "originLocation":{
          "locationDesc":"Beauna Vista Singapore"
        }
      }
    }
  ]
}
```


Process API

Retrieve Consolidated Routes

Version	:	1.0.0
Resource	:	Routes
Method	:	GET
URL	:	/booking/{transportType}/routes
Objective	:	<ul style="list-style-type: none">• To consolidate routes from multiple transport providers. Retrieval from the transport providers need to parallel as there is no dependencies between both of the transport providers.• To map the transport provider specific location code to the common location code and description for standardization• To filter the result based on the input filter criteria To populate the company code where the routes is being retrieved from

Input

Header

Field Name	Field Rule	Mandatory	Type
transactionId	Used for logging and tracking purpose. Example: hdsfhjdh-jxbv859-sjdf7643-3746bbd	Y	String

Query Parameter

Field Name	Field Rule	Mandatory	Type
companyName	If provided, only retrieve the list of routes from this transport provider	N	String
departureLocation	If provided, only retrieve the list of routes from this departureLocation code	N	String
destinationLocation	If provided, only retrieve the list of routes from this destinationLocation code	N	String

Output

Type: Application/json

Output message for getRoutes (Experience API)

```
[
{
  "companyCode": "TransNational",
    "originLocation": {
"locationCode": "BEN-SG", "locationDesc":
    "Beauna Vista Singapore"
},
    "destinationLocation": {
      "locationCode": "KLG-MY",
      "locationDesc": "Klang
      Malaysia"
    }
  },
{
  "companyCode": "TransNational",
    "originLocation": {
"locationCode": "BEN-SG", "locationDesc":
    "Beauna Vista Singapore"
},
    "destinationLocation": {
      "locationCode": "KLG-MY",
      "locationDesc": "Klang
      Malaysia"
    }
  },
{
  "companyCode": "TransNational",
    "originLocation": {
"locationCode": "BEN-SG", "locationDesc":
    "Beauna Vista Singapore"
```

Retrieve Consolidated Schedules

Version : 1.0.0

Resource : Schedules

Method : GET

URL : /booking/{transportType}/schedules

Objective :

- To consolidate schedules from multiple transport providers. Retrieval from the transport providers need to parallel as there is no dependencies between both of the transport providers.

Input

Header

Field Name	Field Rule	Mandatory	Type
transactionId	If provided, only retrieve the list of routes from this transport provider Example: hdsfhjdj-jxbv859-sjdf7643-3746bbd	Y	String

Query Parameter

Field Name	Field Rule	Mandatory	Type
companyName	If provided, only retrieve the list of voyages from this transport provider only	N	String
departureLocation	The departure location code, selected by the customer	N	String
destinationLocation	The destination location code, selected by the customer	N	String
requestTimezone	The time zone where request is originating from. E.g. 0800	N	String

Output

Type: Application/json

Output message

```
{
  "departureSchedules": [
    {
      "companyName": "TravelOnTip",
      "availableSeats": 20,
      "departureDateTime": "2019-04-30T16:41:41",
      "travelRoute": {
        "destinationLocation": {
          "locationCode": "KLG-MY",
          "locationDesc": "Klang Malaysia"
        },
        "originLocation": {
          "locationCode":
            "BEN-SG",
          "locationDesc": "Beauna Vista Singapore"
        }
      }
    },
    {
      "companyName": "FastGo",
      "availableSeats": 30,
      "departureDateTime": "2019-04-30T18:41:41",
      "travelRoute": {
        "destinationLocation": {
          "locationCode": "KLG-MY",
          "locationDesc": "Klang
            Malaysia"
        },
        "originLocation": {
          "locationCode": "BEN-SG",
          "locationDesc": "Beauna Vista Singapore"
        }
      }
    }
  ]
}
```

System API : TravelOnTip

Retrieve TravelOnTip Routes & Schedule

Version : 1.0.0

Routes

Resource : Routes

Method : GET

Security : Basic Authentication within Mule Flow

URL : `/ {transportType} / {transportCompany} / routes`

Objective : To retrieve route list from FirstCoach. Routes list are usually static and are only updated once a month.

Input

Header

Field Name	Field Rule	Mandatory	Type
transactionId	If provided, only retrieve the list of routes from this transport provider Example: hdsfhjdjdh-jxbv859-sjdf7643-3746bbd	Y	String

Output

Type: Application/json

```
[  
{  
  "originLocation": {  
    "locationCode":
```


Schedules

Resource	: Schedules
Method	: GET
URL	: /{transportType}/{transportCompany}/schedules
Objective	: To Retrieve departure schedule list from the FirstCoach Transport Provide based on the routes selected
Exception Handling	: If fail to get the response from back end, return previous successful inquiry back to front end

Input

Header

Field Name	Field Rule	Mandatory	Type
transactionId	If provided, only retrieve the list of routes from this transport provider Example: hdsfhjdh-jxbv859-sjdf7643-3746bbd	Y	String

QueryParams

Field Name	Field Rule	Mandatory	Type
departureLocationCode	If provided, only retrieve the list of routes from this departureLocation code	N	String
destinationLocationCode	If provided, only retrieve the list of routes from this destinationLocation code	N	String

Output

body

Field Name	Field Rule	Mandatory	Type
departureSchedules (multiple occurrence)			
departureDateTime	Departure date time according to the FirstCoach timezone	Y	DateTime
availableSeats	No of available seats for the schedule	Y	int

travelRoute.originLocation.locationCode	The departure location code	Y	String
travelRoute.destinationLocation.locationCode	The arrival location code	Y	String

Type: Application/json

```
[
  {
    "availableSeats":20,
    "departureDateTime":"2019-04-30T16:41:41.090Z",
    "travelRoute":{
      "destinationLocation":{
        "locationCode":"KLG-MY"
      },
      "originLocation":{
        "locationCode":"BEN-SG"
      }
    }
  },
  {
    "availableSeats":30,
    "departureDateTime":"2019-04-30T16:41:41.090Z",
    "travelRoute":{
      "destinationLocation":{
        "locationCode":"KLG-MY"
      },
      "originLocation":{
        "locationCode":"BL-SG"
      }
    }
  }
]
```


System API : FastGo

Retrieve TravelOnTip Routes & Schedule

Version	: 1.0.0
Routes	
Resource	: Routes
Method	: GET
Security	: Basic Authentication within Mule Flow
URL	: /{transportType}/{transportCompany}/routes
Objective	: To retrieve route list from FirstCoach. Routes list are usually static and are only updated once a month.

Input

Header

Field Name	Field Rule	Mandatory	Type
transactionId	If provided, only retrieve the list of routes from this transport provider Example: hdsfhjdjdh-jxbv859-sjdf7643-3746bbd	Y	String

Output

Type: Application/json

```
[
  {
    "departureLocationCode":
      "BEN-SG",
    "arrivalLocationCode":
      "KLG-MY"
  },
  {
    "departureLocationCode":
      "BEN-SG",
    "arrivalLocationCode":
      "BU-MY"
  }
]
```

Schedules

Resource	: Schedules
Method	: GET
URL	: /{transportType}/{transportCompany}/schedules
Objective	: To Retrieve departure schedule list from the FirstCoach Transport Provide based on the routes selected
Exception Handling	: If fail to get the response from back end, return previous successful inquiry back to front end

Input

Header

Field Name	Field Rule	Mandatory	Type
transactionId	If provided, only retrieve the list of routes from this transport provider Example: hdsfhjdh-jxbv859-sjdf7643-3746bbd	Y	String

QueryParams

Field Name	Field Rule	Mandatory	Type
departureLocationCode	If provided, only retrieve the list of routes from this departureLocation code	N	String
destinationLocationCode	If provided, only retrieve the list of routes from this destinationLocation code	N	String

Output

body

Field Name	Field Rule	Mandatory	Type
departureSchedules (multiple occurrence)			
departureDateTime	Departure date time according to the FirstCoach timezone	Y	DateTime
availableSeats	No of available seats for the schedule	Y	int

travelRoute.originLocation.locationCode	The departure location code	Y	String
travelRoute.destinationLocation.locationCode	The arrival location code	Y	String

```
[
{
  "departureDateTime":
    "2019-04-30T16:41:41.090Z",
    "fromLocation": "BEN-SG",
  "toLocation": "KLG-MY,"
    "availableSeats" :
      50
},
{
  "departureDateTime":
    "2019-04-30T18:41:41.090Z",
    "fromLocation": "BEN-SG",
  "toLocation": "KLG-MY,"
    "availableSeats" :
      50
}
]
```

Type: Application/json

