

Salesforce Platform for TMF Hackathon

Architecture Document

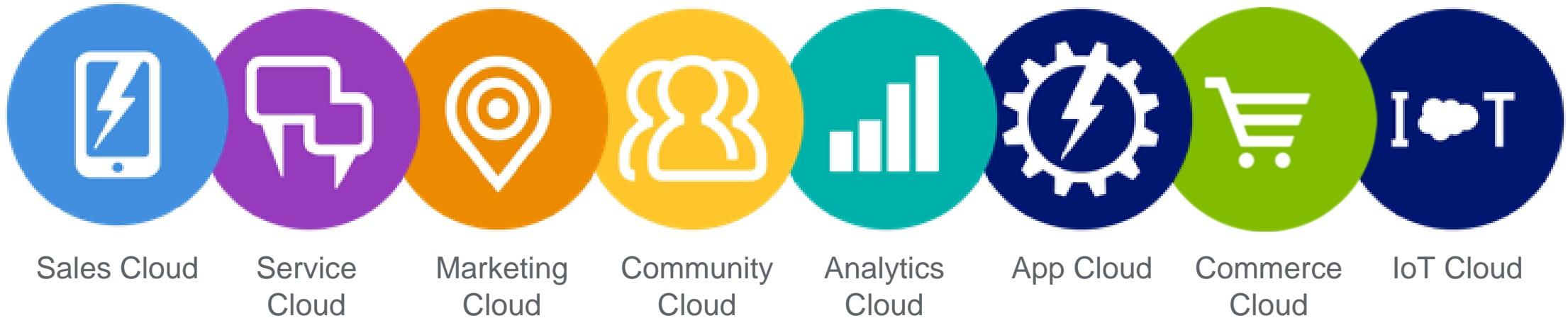
{open}:hack - 14-16 May 2017- Nice - France

An abstract graphic on the left side of the slide features a teal-to-blue gradient. It includes a topographic map with white contour lines and several rectangular markers containing the numbers 16, 102, and 202. Overlaid on this are snippets of code in a light teal color, including HTML tags like <div>, </div>, and <input type="text"/>, as well as variables like username, location, and dream, and a DOCTYPE declaration.

Introduction

We've Built the World's Leading Business Apps

On the world's most powerful enterprise platform

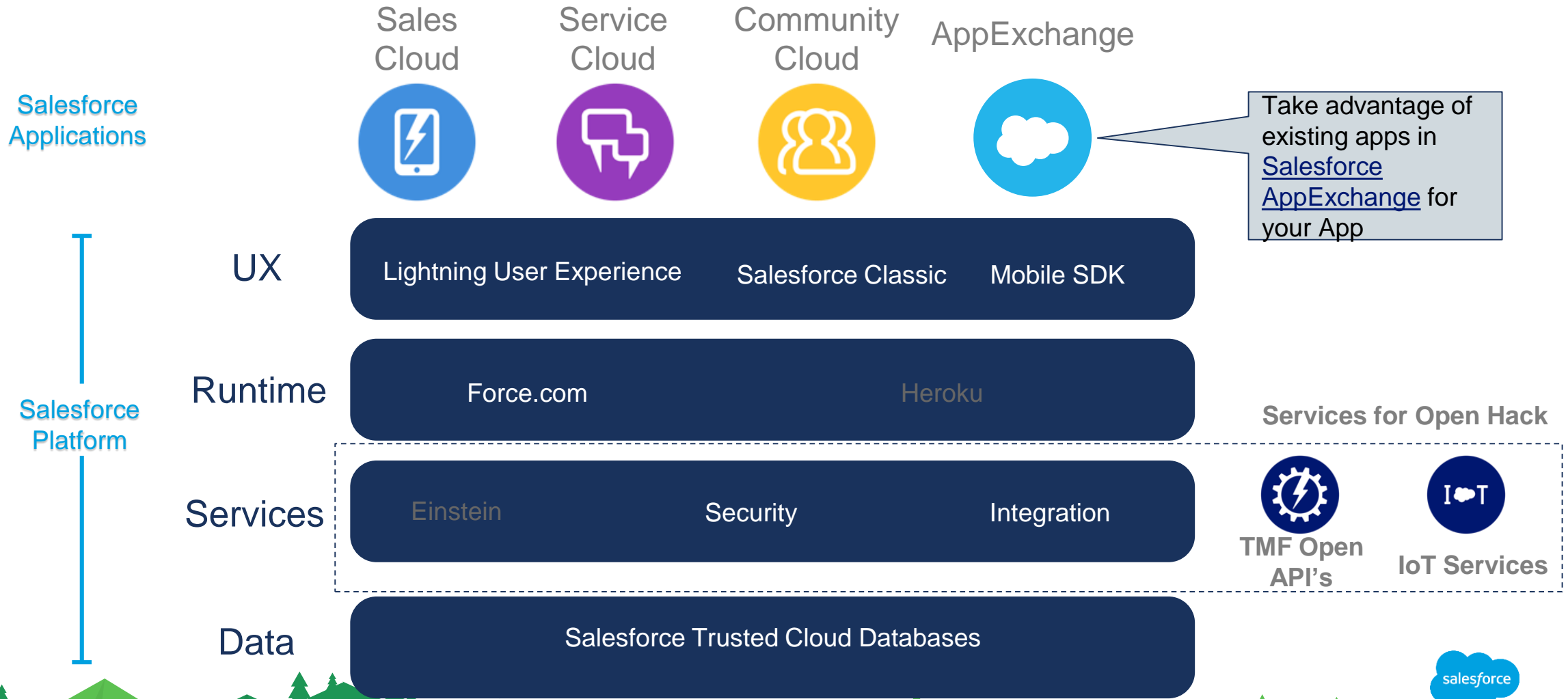


8 Industry Leading Apps | 1 Platform



Salesforce Platform and Technology

Exposed for Hackathon at TMF Live, Nice 2017



Build Apps with Every Skillset

Empower developers, admins and business users to build the way they want



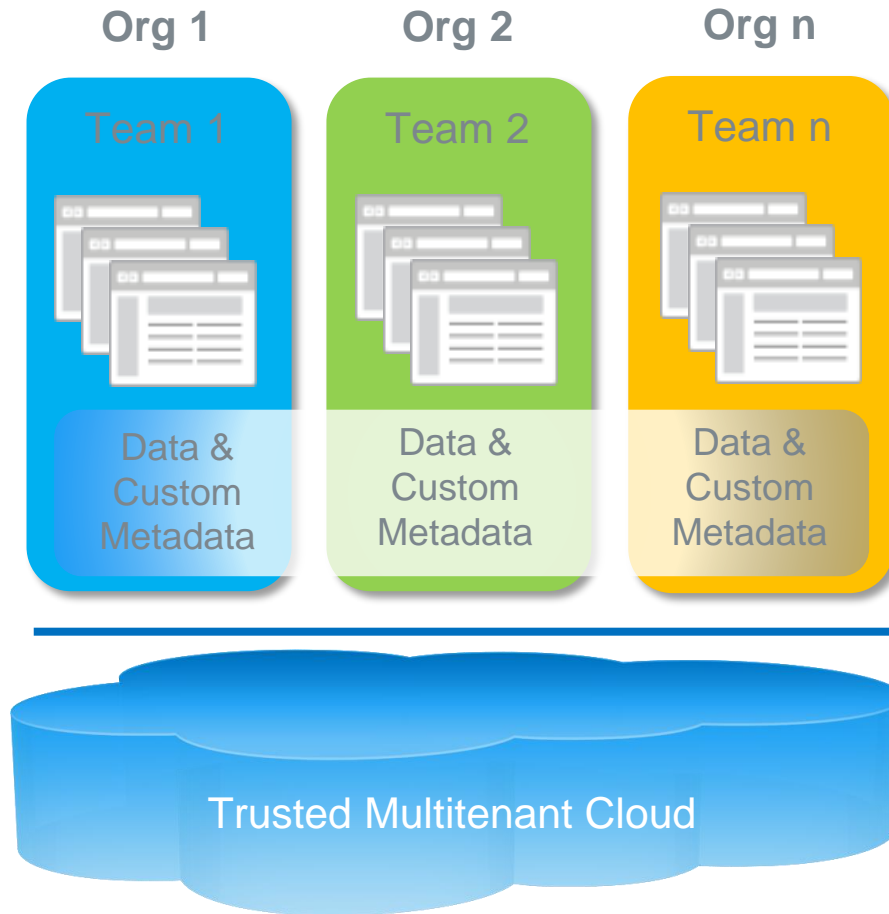
Tools for Building Any App

Full spectrum of capabilities on a single platform



Environment Basics for Hackathon

Each Team Will Have Its Own Salesforce “Org”



- An org is a provisioned set of resources that contain data and metadata supporting one or more applications.
- Although each org is a distinct entity, all orgs share the same underlying Salesforce multitenant platform.
- Each tenant’s data is secure and insulated from other tenants.

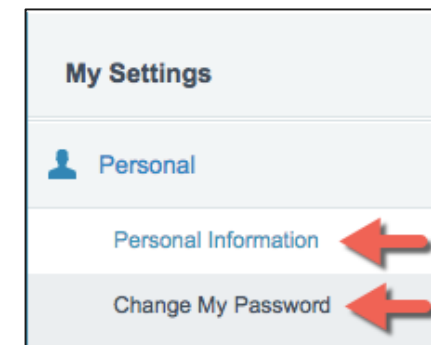
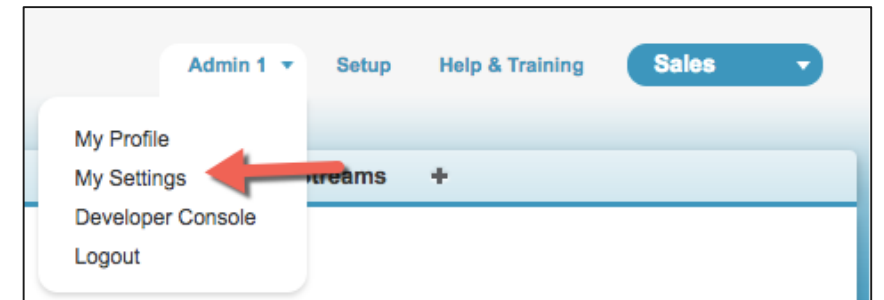
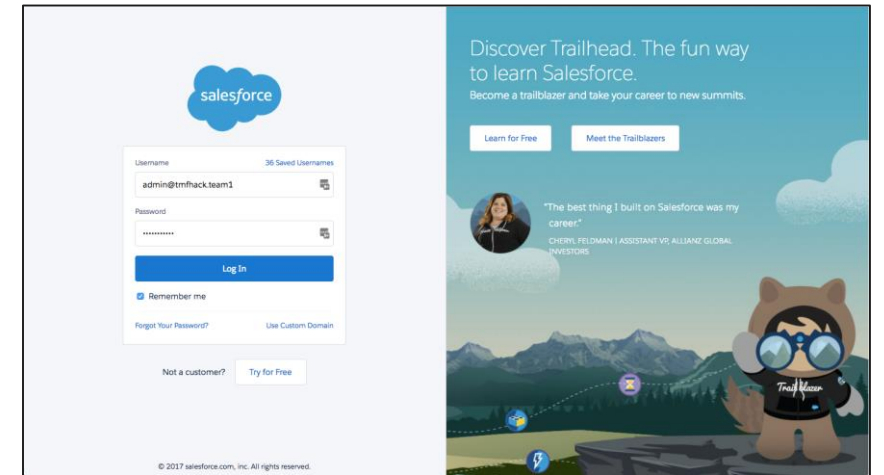
- Seamless upgrades
- No scaling / tuning
- Shared components

How To Connect To Your Org

1. <https://login.salesforce.com/>
2. Username = admin@tmfhack.teamX
where X = your team number
3. Password = salesforce1

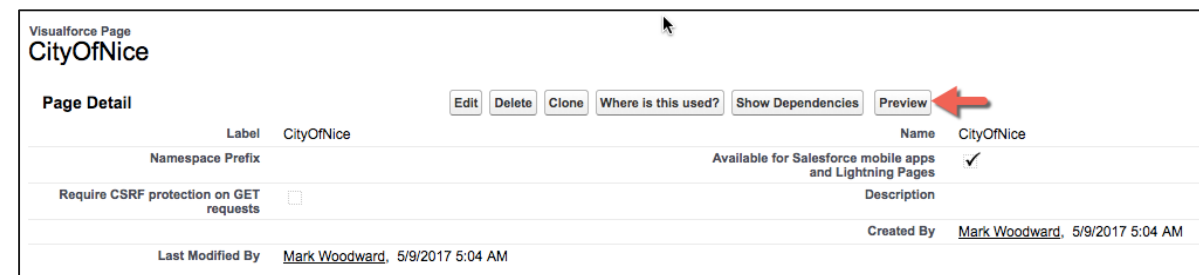
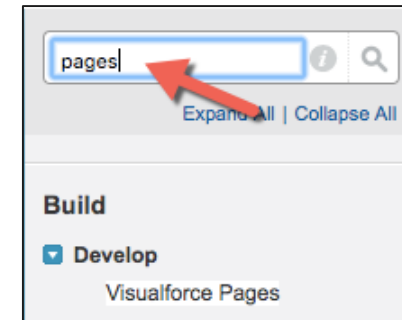
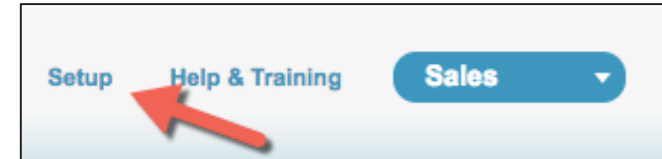
When first connecting, take ownership of the Org

4. Click on *Admin User* in top right hand corner
- pick *My Settings*
5. Expand *Personal*
- pick *Personal Information*
& then change the name & email address
you will receive a confirmation email with a link
- pick *Change My Password* & change the password



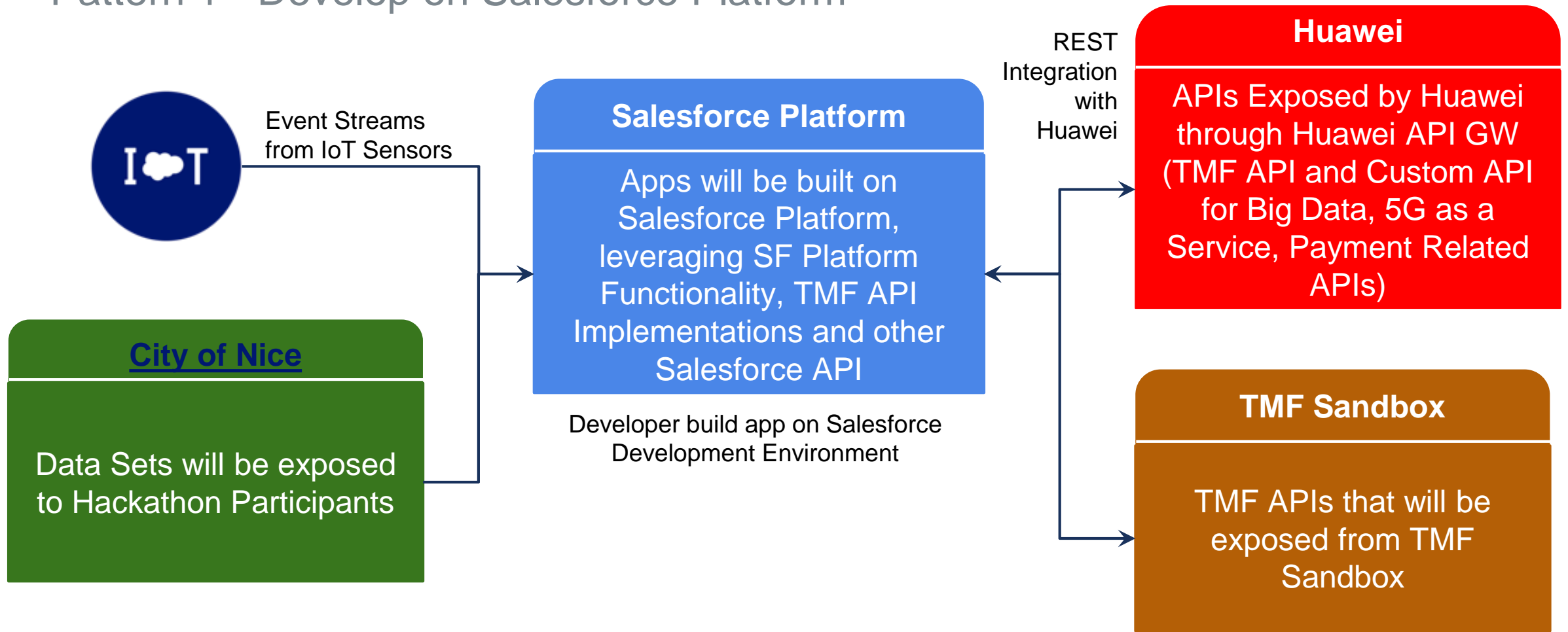
Finding The Integration Code Samples

1. Click on *Setup* in top right hand corner
2. In *Quick Find / Search* box
Type *pages*
Click on *Visualforce Pages*
3. Click into one of the sample pages
e.g. *CityOfNice*
4. Click the *Preview* button to see it in action



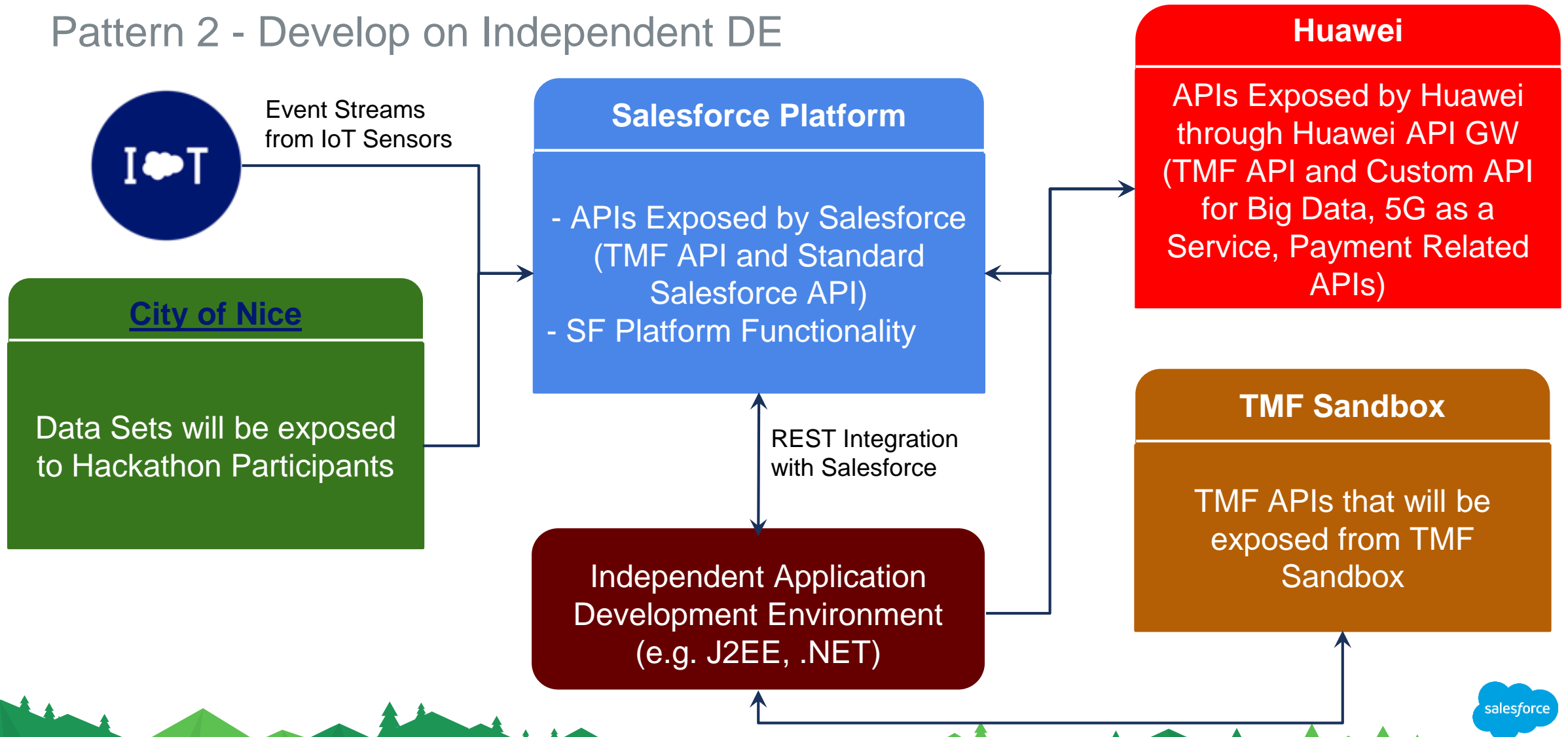
Putting it All Together

Pattern 1 - Develop on Salesforce Platform



Putting it All Together

Pattern 2 - Develop on Independent DE



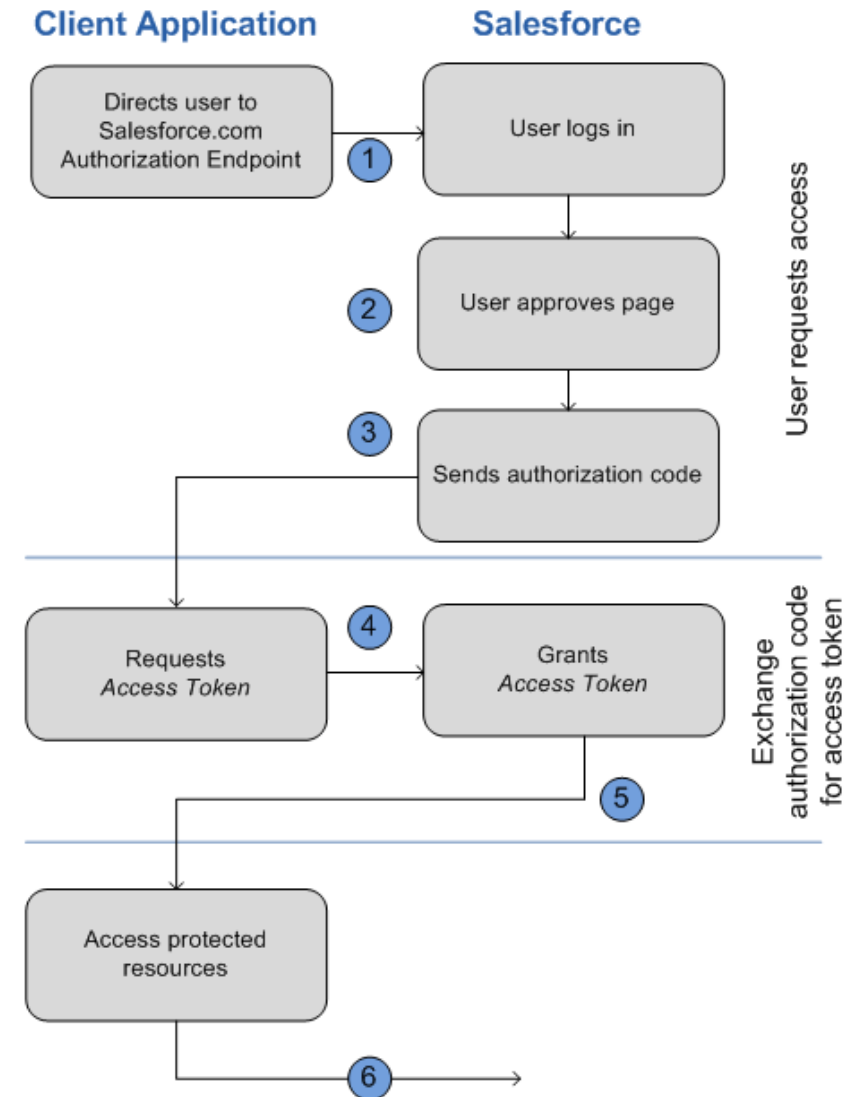
OAuth Authentication Flow

Client Application > Salesforce

Refer [here](#) to understand OAuth Endpoints

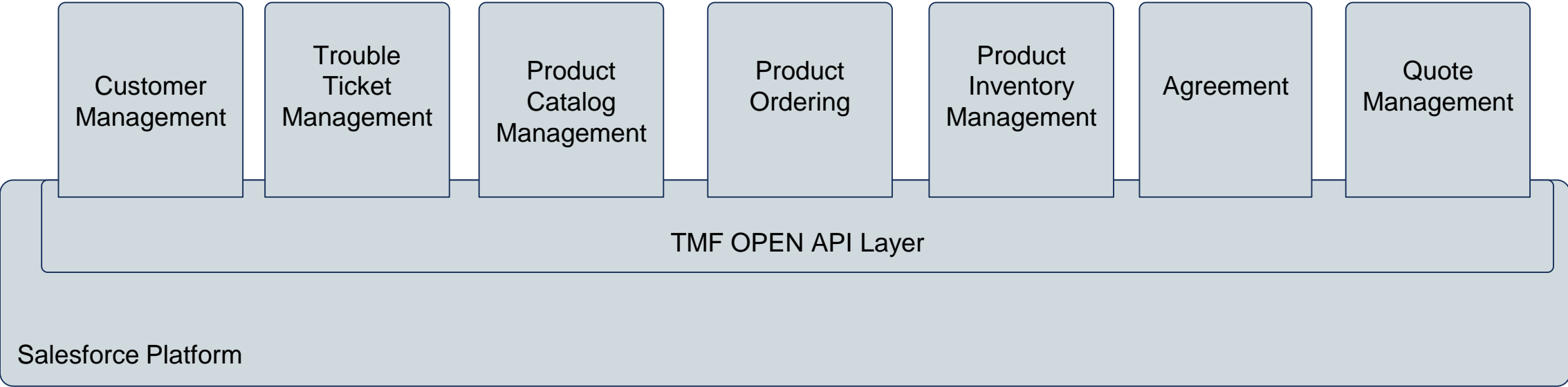
OAuth Authentication Flow (Refer [here](#) for additional details):

1. The application redirects the user to the appropriate Salesforce authorization endpoint
2. The user logs into Salesforce with their credentials
3. After Salesforce confirms that the client application is authorized, the end-user's Web browser is redirected to the callback URL specified by the `redirect_uri` parameter
4. The application extracts the authorization code and passes it in a request to Salesforce for an access token.
5. If this request is successful, the server returns a response body
6. The application uses the provided access token and refresh token to access protected user data.



TMF APIs Available on Salesforce Platform

Exposed for Hackathon



Hackathon Assets for IoT Track

How To prepare your Salesforce ORG for IoT Track

Event Registration HTML Page

Sensor Field 1

Team Name:
Name: Electric Temp, Value:
Trigger High Value –
Trigger Low Value –
Trigger Equal Value -

Sensor Field 2

Team Name:
Name: Electric Temp, Value:
Trigger High Value –
Trigger Low Value –
Trigger Equal Value -

Event Stream Setup

Event Stream and Standard Orchestration for each sensor is automatically created in IOT Cloud for every team

Create Custom Object in SF Org

A custom object will be built in SF Org for team (through managed package) with fields for each sensor (A row will be inserted in this object for every trigger match)

Define workflows/triggers

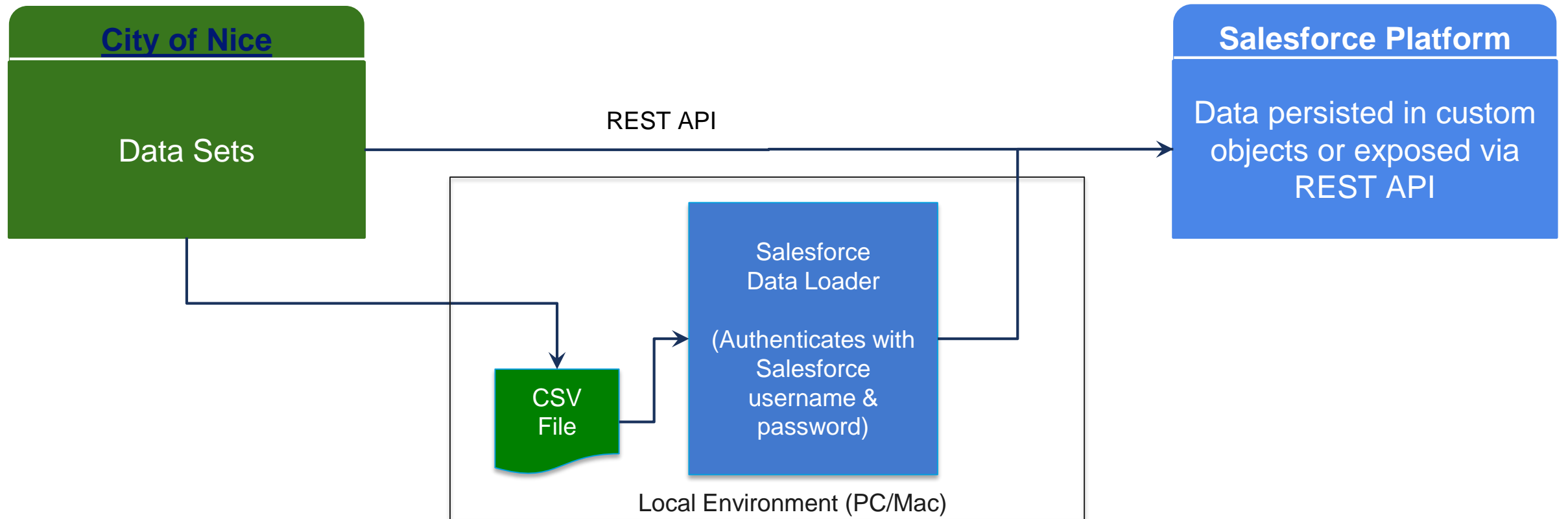
Hackathon Team should configure workflow or create triggers or APEX classes for each row entry

Integration with City of Nice

API integration and Data Upload

Integration Mechanism

City of Nice -> Salesforce



How To Retrieve ID - Step 1

The City of Nice has 80 datasets:

<http://opendata.nicecotedazur.org/data/organization/ville-de-nice>

Identify a data set and click on the link:

(e.g., Weekly program of activities in the House of Nice Associations)

Additional Information:

[City of Nice Developer Resource Documentation](#)

[CKAN API Guide](#)

[City Of Nice OpenData URL](#)

80 datasets found sort by: Name Ascending

Weekly program of activities in the Houses of Nice Associations for 2016-2017
City of Nice
This data set presents, weekly, the weekly program of activities proposed in the Maisons des Associations for the season 2016-2017
Updated: 1 day ago

List and of Nice polling stations by canton for 2017
City of Nice
You will find here the list of polling stations in Nice by canton taking effect on 1 March 2017.
Updated: 2 days ago

Number of passports issued per month per 2016 town hall annex

Weekly program of activities in the Nice Associations' Houses for 2016-2017

This data set presents, weekly, the weekly program of activities proposed in the Maisons des Associations for the season 2016-2017

Data and Resources

Xls Week 17 from 24 to 29 April 2017.xls Overview Download

[View all files](#)



How To Retrieve ID - Step 2

Click on the 'Overview' button:

Scroll down to the 'Additional Information' section (click the 'Show More' link). Take note of the ID. This is what you will use in the query param for 'resource_id' in the API. There are additional query parameters, please refer to aforementioned documentation for a full list.

Weekly program of activities in the Nice Associations' Houses for 2016-2017

This data set presents, weekly, the weekly program of activities proposed in the Maisons des Associations for the season 2016-2017

Data and Resources

Xls Week 17 from 24 to 29 April 2017.xls [Overview](#) [Download](#)

[View all files](#)

Additional information

Field	Value
Creation	1 day ago
Last modification	1 day ago
Format	XLS
Licence	Open License
Language	French
ID	95654e58-6094-4287-9c69-aebae927e738
File size	71 kibi
URL Preview	Http://opendata.nicecotedazur.org/data/dataset/5a5abccf-4de2-442e-b113-74fc26a0c045/resource/95654e58-6094-4287-9c69-aebae927e738/preview

How To Retrieve ID - Step 3

http://opendata.nicecotedazur.org/data/api/3/action/datastore_search?resource_id=a53ec36a-87b0-43c3-9f4d-93c0d099a4f9



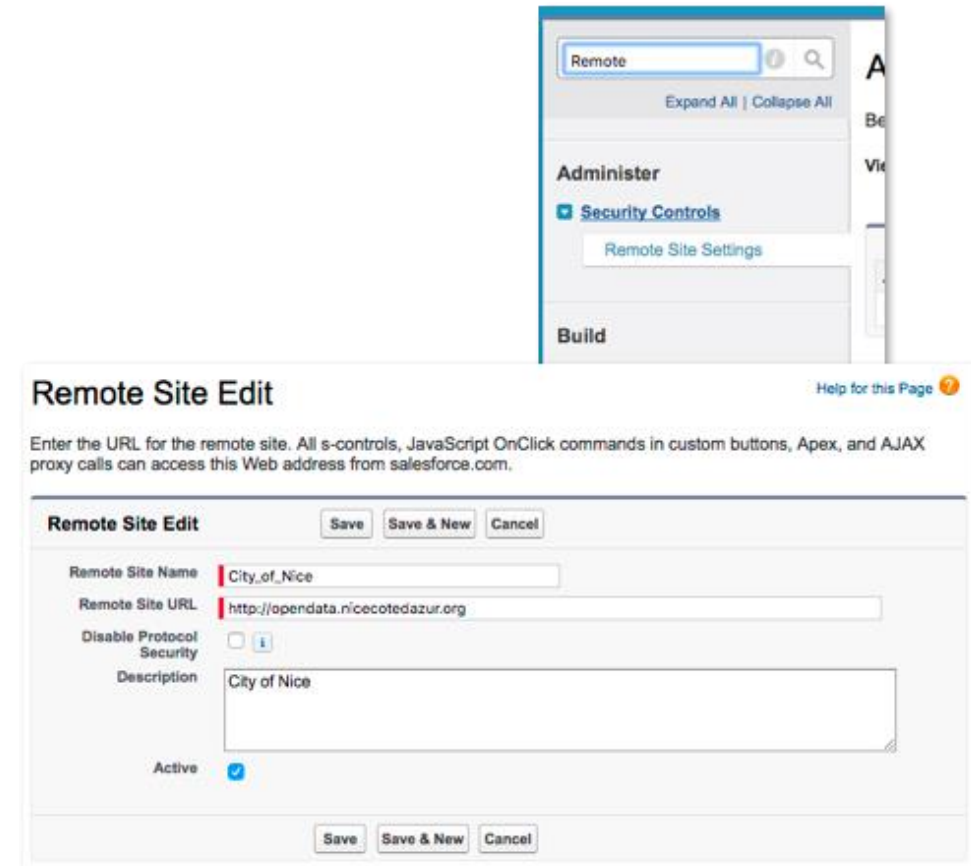
Additional information

Field	Value
Creation	10 October 2016
Last modification	10 October 2016
Format	Xlsx
Licence	Open License
Language	French
ID	A53ec36a-87b0-43c3-9f4d-93c0d099a4f9

How to integrate API into Salesforce

In order to utilize the previously referenced APIs, the remote site needs to be registered with your Salesforce instance:

1. From within your Salesforce instance, click on the 'Setup' link in the upper right-hand corner.
2. In the left-hand menu, type in 'Remote' in the search bar.
3. Click the 'Remote Site Settings' and register the URL for the remote site.
4. For more details, please refer to the official Salesforce documentation: https://developer.salesforce.com/docs/atlas.en-us.apexcode.meta/apexcode/apex_callouts_remote_site_settings.htm



The image shows a screenshot of the Salesforce 'Remote Site Edit' page. The top part of the page is a navigation menu with a search bar containing the word 'Remote'. Below the search bar are links for 'Expand All' and 'Collapse All'. The main content area is titled 'Remote Site Edit' and includes a 'Help for this Page' link. Below the title is a warning message: 'Enter the URL for the remote site. All s-controls, JavaScript OnClick commands in custom buttons, Apex, and AJAX proxy calls can access this Web address from salesforce.com.' The form contains several fields: 'Remote Site Name' with the value 'City_of_Nice', 'Remote Site URL' with the value 'http://opendata.nicecotedazur.org', 'Disable Protocol Security' with an unchecked checkbox, and 'Description' with the value 'City of Nice'. There are also 'Active' checkboxes, one of which is checked. At the bottom of the form are buttons for 'Save', 'Save & New', and 'Cancel'.

How to integrate API into Salesforce (City of Nice)

The next few slides shows a very simple implementation of a Custom Visual Force page (figure 1.) and Extension Class (figure 2.) invoking an External API.

Figure 1. – Custom Visual Force page

```
1 <apex:page standardController="Account" extensions="AccountExtension" >
2   <apex:pageBlock title="Polling Stations">
3     <apex:pageBlockTable value="{!calloutResponseContents}" var="myStation">
4       <apex:column value="{!myStation.adresses}"/>
5       <apex:column value="{!myStation.bureaux}"/>
6     </apex:pageBlockTable>
7   </apex:pageBlock>
8 </apex:page>
```


How to integrate API into Salesforce (City of Nice), cont'd

```
public List<PollingStation> getCalloutResponseContents() {  
  
    // Instantiate a new http object  
    Http h = new Http();  
  
    // Instantiate a new HTTP request, specify the method (GET) as well as the endpoint  
    HttpRequest req = new HttpRequest();  
    //req.setEndpoint(url);  
    req.setEndpoint('http://opendata.nicecotedazur.org/data/api/3/action/datastore_search?resource_id=a53ec36a-87b0-43c3-9f4d-93c0d099a4f9');  
    req.setMethod('GET');  
  
    // Send the request, and return a response  
    HttpResponse res = h.send(req);  
  
    // Parse JSON response to get all the id field values.  
    JSONParser parser = JSON.createParser(res.getBody());  
    String prevToken = '';  
    List<PollingStation> pollingStations;  
  
    while (parser.nextToken() != null) {  
        if ((parser.getCurrentToken() == JSONToken.FIELD_NAME) && (parser.getText() == 'records')) {  
            prevToken = 'records';  
        }  
        if (parser.getCurrentToken() == JSONToken.START_ARRAY && prevToken == 'records') {  
            pollingStations = new List<PollingStation>();  
            while (parser.nextToken() != null) {  
                if (parser.getCurrentToken() == JSONToken.START_OBJECT) {  
                    PollingStation station = (PollingStation)parser.readValueAs(PollingStation.class);  
                    pollingStations.add(station);  
                    parser.skipChildren();  
                }  
            }  
        }  
    }  
    return pollingStations;  
}  
  
public class PollingStation {  
    public String degree { get; set; }  
    public String bureaux { get; set; }  
    public String addresses { get; set; }  
    public String id;  
  
    public PollingStation(String parserDegree, String parserBureaux, String parserAddresses, String parserId) {  
        degree = parserDegree;  
        bureaux = parserBureaux;  
        addresses = parserAddresses;  
        id = parserId;  
    }  
}
```

Figure 2. – Custom Extension Class and method responsible for

How to integrate API into Salesforce (City of Nice), cont'd

Figure 3. – Rendered List of data served from external API

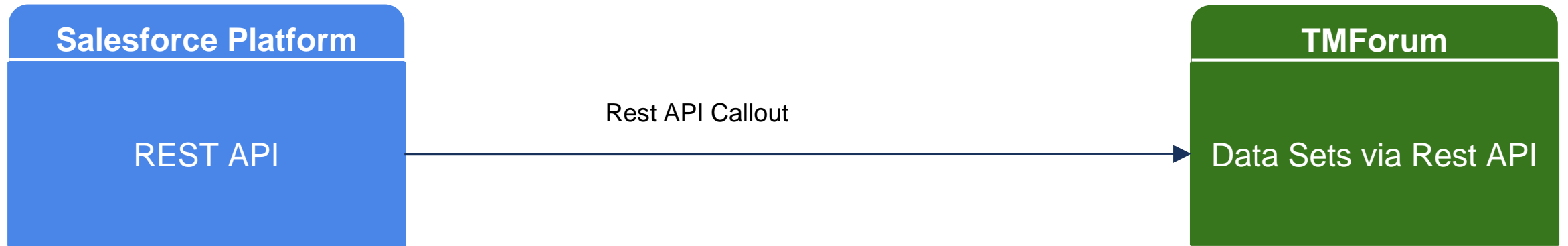
Polling Stations	
Palais Masséna 65, rue de France	MASSENA
Palais Masséna 65, rue de France	MEYERBEER
Palais Masséna 65, rue de France	RIVOLI
Ecole Ronchèse maternelle rue Spitalieri	LONGCHAMP
Ecole Ronchèse maternelle rue Spitalieri	DEROULEDE
Ecole Auber maternelle 35, avenue Auber	AUBER
Ecole Auber maternelle 35, avenue Auber	ROSSINI
Ecole Auber maternelle 35, avenue Auber	PAGANINI
Ecole Auber maternelle 35, avenue Auber	GUIGLIA
Ecole Auber mixte 35, avenue Auber	BERLIOZ
Ecole Auber mixte 35, avenue Auber	MARECHAL JOFFRE
Ecole des Baumettes maternelle I 13, rue des Potiers	FRANKLIN
Ecole des Baumettes maternelle I 13, rue des Potiers	CHATEAUNEUF
Ecole des Baumettes maternelle II 24, rue Dante	BAUMETTES
Ecole des Baumettes maternelle II 24, rue Dante	BOTTERO
Ecole des Baumettes maternelle II 24, rue Dante	LES FLEURS
Ecole des Baumettes mixte I 23, rue Dante	DANTE
Ecole des Baumettes mixte I 23, rue Dante	FRANCOIS GROSSO
Ecole des Baumettes mixte I 23, rue Dante	ORANGERS
Ecole des Baumettes mixte II 26, rue Dante	SHAKESPEARE
Lycée Honoré d'Estienne d'Orves - Rive Gauche 38. avenue d'Estienne d'Orves	CLUVIER

Integration with TMForum Sandbox

API integration

Integration Mechanism

Salesforce -> TMForum

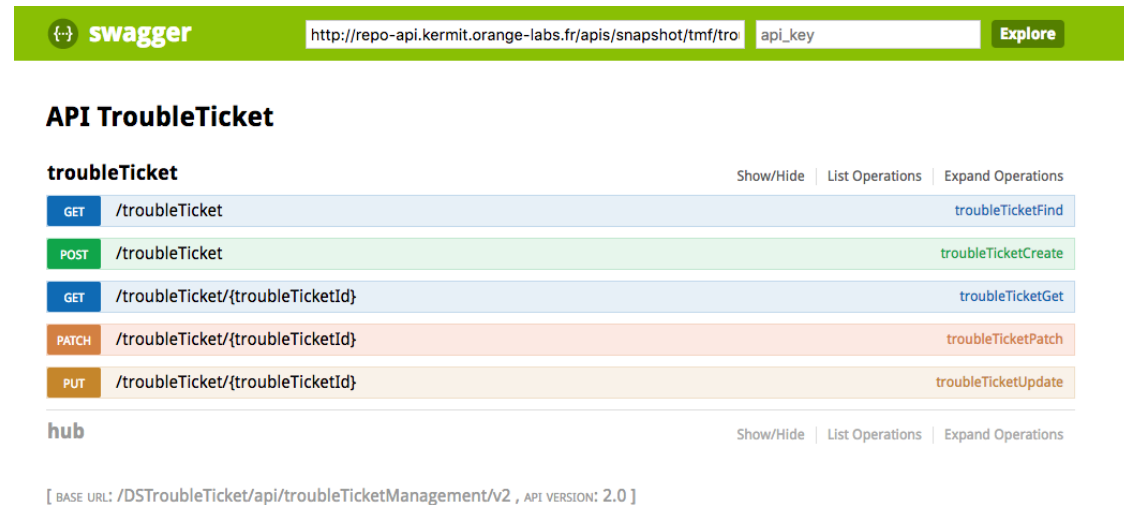


TM Forum Open API Table

<https://projects.tmforum.org/wiki/display/API/Open+API+Table>

Sandbox URL (e.g. of TroubleTicker API in the Swagger_UI)

<http://repo-api.kermit.orange-labs.fr/swagger-ui/?url=http://repo-api.kermit.orange-labs.fr/apis/snapshot/tmf/troubleTicket/v2/swagger2.json>



The screenshot shows the Swagger UI interface for the TroubleTicket API. At the top, there is a green header with the Swagger logo, a text input field containing the URL `http://repo-api.kermit.orange-labs.fr/apis/snapshot/tmf/tro`, a dropdown menu set to `api_key`, and an `Explore` button. Below the header, the API is titled **API TroubleTicket**. Underneath, there is a section for **troubleTicket** with links for `Show/Hide`, `List Operations`, and `Expand Operations`. The operations are listed in a table:

Method	Path	Operation Name
GET	/troubleTicket	troubleTicketFind
POST	/troubleTicket	troubleTicketCreate
GET	/troubleTicket/{troubleTicketId}	troubleTicketGet
PATCH	/troubleTicket/{troubleTicketId}	troubleTicketPatch
PUT	/troubleTicket/{troubleTicketId}	troubleTicketUpdate

Below the operations, there is a section for **hub** with links for `Show/Hide`, `List Operations`, and `Expand Operations`. At the bottom, the base URL is shown as `[BASE URL: /DSTroubleTicket/api/troubleTicketManagement/v2 , API VERSION: 2.0]`.

How to integrate API into Salesforce (TMForum)

The next few slides shows a very simple implementation of a Custom Visual Force page (figure 1.) and Extension Class (figure 2.) invoking an External API (User is able to enter in a trouble ticket and get response).

```
TMForumAPI.page — BlueTug Dev Org
TMForumAPI.page x AccountExtension.cls x CityOfNice.page x TMForumDrone.page x SFField
1 <apex:page standardController="Account" extensions="AccountExtension" >
2   <apex:pageBlock title="Trouble Tickets">
3     <apex:form>
4       Please enter a ticket number: &nbsp;  
5       <apex:inputText value="{!ticketNumber}"/>
6       <apex:commandButton action="{!submitTicketNumber}" value="Submit"/>&nbsp;  
7
8     </apex:form>
9     <apex:pageBlockTable value="{!troubleTickets}" var="ticket" rendered="{!ticketNumber != NULL}">
10      <apex:column value="{!ticket.description}"/>
11      <apex:column value="{!ticket.type}"/>
12      <apex:column value="{!ticket.creationDate}"/>
13      <apex:column value="{!ticket.targetResolutionDate}"/>
14      <apex:column value="{!ticket.status}"/>
15      <apex:column value="{!ticket.statusChangeReason}"/>
16      <apex:column value="{!ticket.statusChangeDate}"/>
17      <apex:column value="{!ticket.severity}"/>
18    </apex:pageBlockTable>
19  </apex:pageBlock>
20 </apex:page>
```

How to integrate API into Salesforce (TMForum), cont'd

```
public void submitTicketNumber() {
    System.debug('Not much to do here, page is refreshed with the ticket number in the field');
}

public List<TroubleTicket> getTroubleTickets(){

    // Instantiate a new http object
    Http h = new Http();

    // Instantiate a new HTTP request, specify the method (GET) as well as the endpoint
    HttpRequest req = new HttpRequest();
    req.setEndpoint('http://env-0693795.jelastic.servint.net/DSTroubleTicket/api/troubleTicketManagement/v2/troubleTicket/' + ticketNumber);
    req.setMethod('GET');

    // Send the request, and return a response
    HttpResponse res = h.send(req);

    // Parse JSON response to get all the id field values.
    JSONParser parser = JSON.createParser(res.getBody());
    System.debug(res.getBody());
    List<TroubleTicket> troubleTickets;

    troubleTickets = new List<TroubleTicket>();

    while (parser.nextToken() != null) {
        if (parser.getCurrentToken() == JSONToken.START_OBJECT) {
            TroubleTicket station = (TroubleTicket)parser.readValueAs(TroubleTicket.class);
            troubleTickets.add(station);
            parser.skipChildren();
        }
    }

    return troubleTickets;
}
```


How to integrate API into Salesforce (TMForum), cont'd

ports Dashboards Orders +

Trouble Tickets

Please enter a ticket number:

Trouble Tickets

Please enter a ticket number:

nanana	device	2017-05-08T14:37:30Z	Submitted	2017-05-08T14:37:30Z	High
--------	--------	----------------------	-----------	----------------------	------

How to integrate API into Salesforce, cont'd

Developer resources for items referenced above:

1. Creating custom visual force pages:

https://developer.salesforce.com/docs/atlas.en-us.pages.meta/pages/pages_quick_start_hello_world.htm

2. Building custom controllers and extensions:

https://developer.salesforce.com/docs/atlas.en-us.pages.meta/pages/pages_controller_custom.htm

https://developer.salesforce.com/docs/atlas.en-us.pages.meta/pages/pages_controller_extension.htm

3. APEX Json Parser:

https://developer.salesforce.com/docs/atlas.en-us.apexcode.meta/apexcode/apex_json_jsonparser.htm

https://developer.salesforce.com/docs/atlas.en-us.apexcode.meta/apexcode/apex_class_System_JsonParser.htm

Thank You