

# CA PPM

## Creating REST APIs to Enable Our Connected World

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Jose Antonio Garcia Blázquez  
Sr. Principal Consultant, Agile Management Presales

[Joseantonio.garcia@ca.com](mailto:Joseantonio.garcia@ca.com)

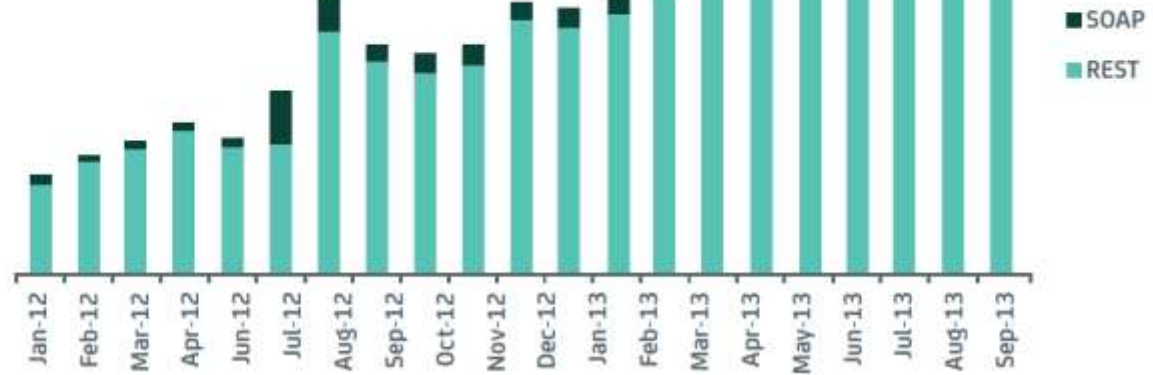


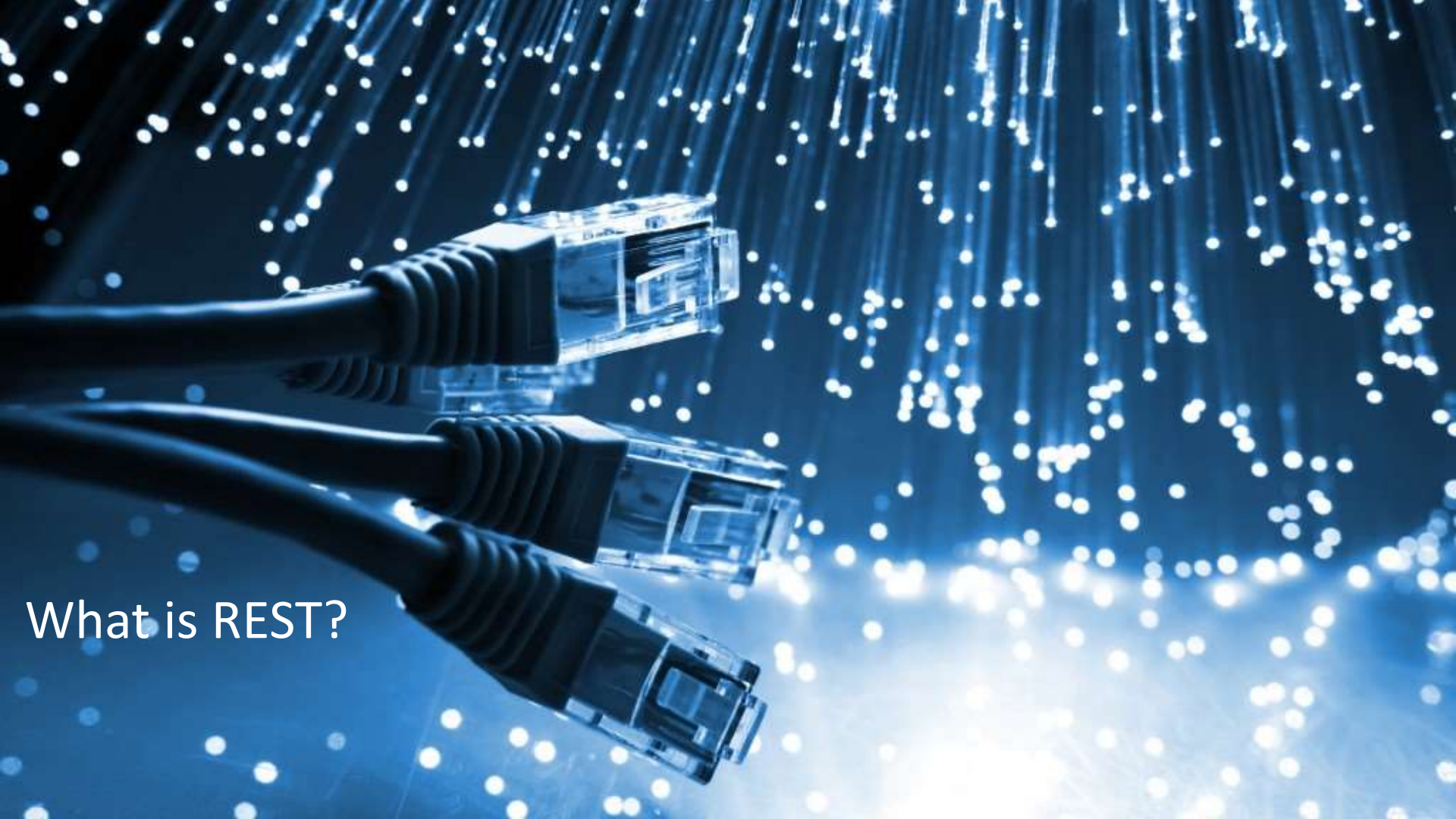
# Restful API

# The World is Getting Connected



# Growth of REST





What is REST?



# REST is NOT!

- A protocol.
- A standard.
- A replacement for SOAP.



# REST

- Representational State Transfer
- Architectural style (technically not a standard)
- Uses existing standards, e.g., HTTP
- REST is an architecture all about the Client-Server communication.



# An Architectural Style

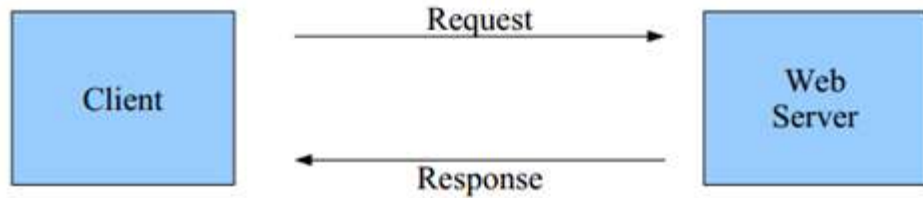
- REST is the architecture of the Web as it works today and, so it is already used in the **web**!
- It is an software architectural model which is used to describe distributed systems like **WWW** (**W**orld **W**ide **W**eb).
- It has been developed in parallel with **HTTP** protocol.



# THE WEB



## The Web



# REST

- Client **requests** a specific **resource** from the server.
- The server **responds** to that request by delivering the requested resource.
- Server does not have any information about any client.
- So, there is no difference between the two requests of the same client.
- A model which the representations of the resources are transferred between the client and the server.
- The Web as we know is already in this form!

# REST Characteristics

- Resources: Application state and functionality are abstracted into resources.
  - ❑ URI: Every resource is **uniquely addressable** using URIs.
  - ❑ Uniform Interface: All resources share a uniform interface for the transfer of state between client and resource, consisting of
    - **Methods**: Use only HTTP methods such as **GET, PUT, POST, DELETE, HEAD**
    - **Representation**
- Protocol (The constraints and the principles)
  - ❑ Client-Server
  - ❑ Stateless
  - ❑ Cacheable
  - ❑ Layered



# HTTP Methods

- GET — *safe, idempotent, cacheable*
- PUT - *idempotent*
- POST
- DELETE - *idempotent*
- HEAD
- OPTIONS

# CRUD Operations Mapped to HTTP Methods in RESTful Web Services

OPERATION	HTTP METHOD
Create	POST
Read	GET
Update	PUT or POST
Delete	DELETE

# RESTful Web Services

- RESTful web services are web services which are REST based.
- **Stateless & cacheable.**
- Uses **URI & HTTP** methods.
- Frequently used with **SOA** projects.
- Quiet light, extensible and simple services.
- The reason behind the **popularity of REST** is that the applications we use are **browser-based** nowadays and top it all, REST is built on **HTTP**.
- Main idea: Providing the communication between **client** and **server** over **HTTP** protocol rather than other complex architectures like SOAP and RPC etc.

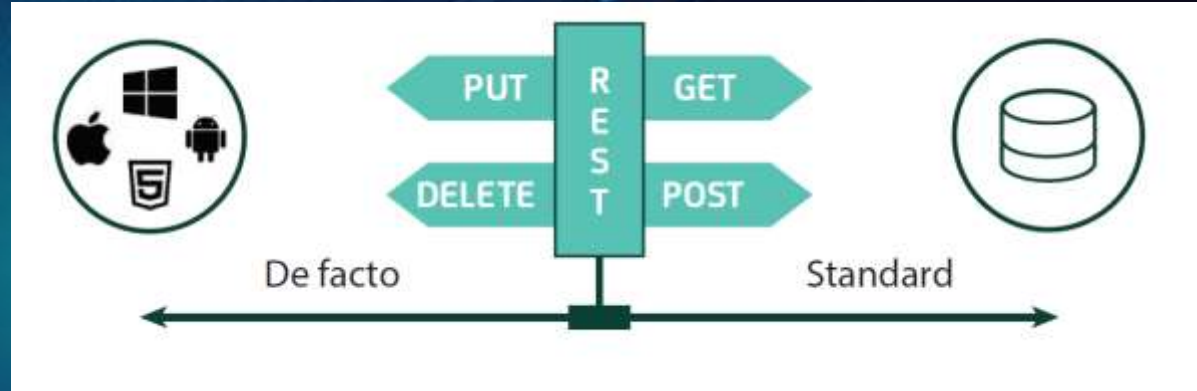


# RESTful Web Services

- Platform independent.
- Language independent.
- Work on HTTP protocol.
- Flexible and easily extendible.
- They also have some constraints or principles.
  - *Client-Server*
  - *Stateless*
  - *Cacheable*
  - *Uniform Interface*
  - *Layered System*
  - *Code on Demand*

# What REST actually aims for?

- Scalability
- Simplicity
- Modifiability
- Useability
- Portability
- Reliability



# Benefits

## Network Performance

- Efficiency
- Scalability
- User Perceived Performance

## Other Benefits

- ▶ Simplicity
- ▶ Evolvability
- ▶ Reuseability
- ▶ Visibility
- ▶ Extensibility
- ▶ Configuration
- ▶ Customizability



# CA PPM Restful API

## Release Notes: Version 15.1

### REST API Update

**Important!** The CA PPM REST APIs can only be used by CA PPM engineering. At this time, the REST APIs are not supported for customer or partner use.

Our strategy is to focus on developing robust APIs as we design our new user experience. The APIs may change as we make architectural improvements, add capabilities, and optimize performance. We will review our strategy every release and make the APIs publicly available as soon as possible.

# CA PPM REST APIs

The CA PPM REST APIs provide the capability to perform the following API operations:

- **Projects:** Create, update, or retrieve
- **Tasks:** Create, update, retrieve, or delete
- **Teams:** Create, update, retrieve, or delete
- **Assignments:** Create, update, retrieve, or delete
- Retrieve **resources**
- **Timesheets:** Create, update, retrieve, or delete. Time entries, timesheet notes, and time entry notes
- Retrieve **time periods**
- Create, update, or retrieve **project status reports**
- Create or update integration instances
- Retrieve values from lookups

# REST APIs

Standard HTTP methods to access the REST APIs

- GET
- POST
- PUT/PATCH
- DELETE





# Authorize and Authenticate for the APIs

The REST APIs support the following methods for authenticating user requests:

- Token based authentication using login and logout API endpoints
- Basic authentication that is based on an encoded username and password
- Session or cookie based

# Enable Custom Attributes for the APIs

Object: Project | Attribute: Business Alignment - *Object Attribute*

**General** ★

✖ Attribute Name Business Alignment

✖ ➔ ✖ Attribute ID obj\_alignment

Description Business Alignment

➔ Data Type Calculated

✖ Result Data Type Number

Current Expression Average(obj\_align\_factor1,obj\_align\_factor2,obj\_align\_factor3,obj\_align\_factor4,obj\_align\_factor5,obj\_align\_factor6)

Decimal Places ( Enter 0 for integer )

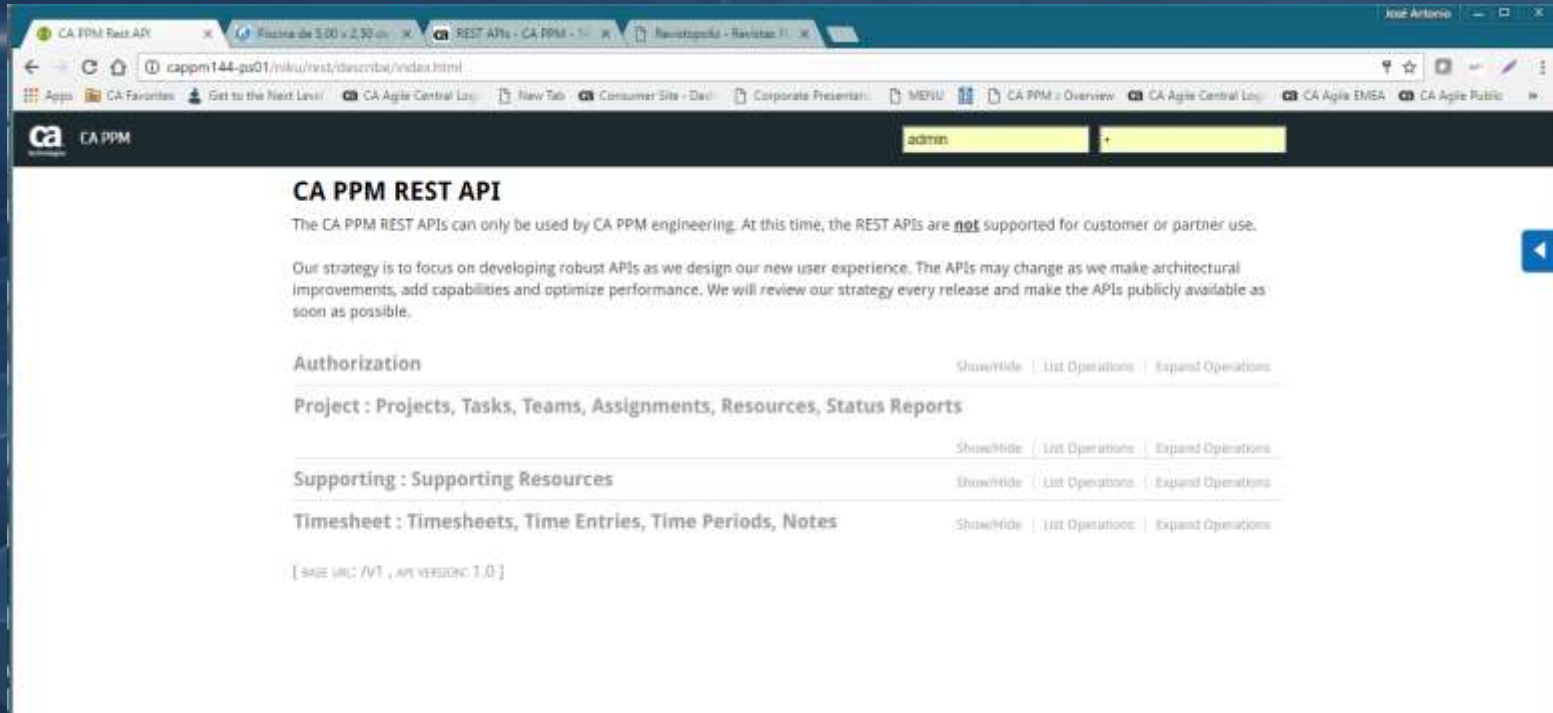
Presence Required ☐

✖ API Attribute ID

( This is the attribute id used in the REST API. Set this to make the attribute available via the REST API. )

Include in the Data Warehouse ☒

# Access the APIs and Reference Documentation



The screenshot shows a web browser window with the URL `cappm144-ps01/niku/rest/describe/index.html`. The browser's address bar and tabs are visible at the top. The page header includes the CA PPM logo and a navigation menu with links like 'CA PPM Overview', 'CA Agile Central Log', 'CA Agile EMA', and 'CA Agile Public'. A user login area shows 'admin' and a plus sign.

## CA PPM REST API

The CA PPM REST APIs can only be used by CA PPM engineering. At this time, the REST APIs are not supported for customer or partner use.


Our strategy is to focus on developing robust APIs as we design our new user experience. The APIs may change as we make architectural improvements, add capabilities and optimize performance. We will review our strategy every release and make the APIs publicly available as soon as possible.

<b>Authorization</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>
<b>Project : Projects, Tasks, Teams, Assignments, Resources, Status Reports</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>
<b>Supporting : Supporting Resources</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>
<b>Timesheet : Timesheets, Time Entries, Time Periods, Notes</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>

[ BASE URL: /V1 , API VERSION: 1.0 ]



# REST APIs Discovery

 CA PPM

ADMIN

## CA PPM REST API

The CA PPM REST APIs can only be used by CA PPM engineering. At this time, the REST APIs are in beta.

Our strategy is to focus on developing robust APIs as we design our new user experience. The improvements, add capabilities and optimize performance. We will review our strategy every 6 months as possible.

### Authorization

**Project :** Projects, Tasks, Teams, Assignments, Resources, Status Reports

GET	/projects/{projectsInternalId}/projectStatusReports
POST	/projects/{projectsInternalId}/projectStatusReports
GET	/projects/{projectsInternalId}/teams
POST	/projects/{projectsInternalId}/teams
GET	/resources
GET	/projects
POST	/projects
GET	/projects/{projectsInternalId}/tasks/{tasksInternalId}/assignments
POST	/projects/{projectsInternalId}/tasks/{tasksInternalId}/assignments
DELETE	/projects/{projectsInternalId}/tasks/{tasksInternalId}
GET	/projects/{projectsInternalId}/tasks/{tasksInternalId}
PUT	/projects/{projectsInternalId}/tasks/{tasksInternalId}
PUT	/projects/{projectsInternalId}/tasks/{tasksInternalId}

## Project : Projects, Tasks, Teams, Assignments, Resources, Status Reports

	Show/Hide	List Operations	Expand Operations
GET /projects/{projectsInternalId}/projectStatusReports			Retrieve projectStatusReports.
POST /projects/{projectsInternalId}/projectStatusReports			Creation of projectStatusReports.
GET /projects/{projectsInternalId}/teams			Retrieve teams.
POST /projects/{projectsInternalId}/teams			Creation of teams.
GET /resources			Retrieve resources.
GET /projects			Retrieve projects.

### Implementation Notes

Returns a list of projects.

### Response Class (Status 200)

Model Model Schema

```
{
  "_pageSize": 0,
  "_self": "string",
  "_totalCount": 0,
  "_results": [
    {
      "code": "string",
      "name": "string"
    }
  ],
  "nextPageToken": 0
}
```


Response Content Type application/json

### Parameters

Parameter	Value	Description	Parameter Type	Data Type
limit		Limits the number of results to	query	integer

# Getting started with Rest API

<https://communities.ca.com/message/241885207>



## Getting started with Rest API

Discussion created by [Eric Gingras](#) on 19-May-2016  
Latest reply on 07-Jul-2016 by [Corine Po](#)

Like • 11    Comment • 5

Hi,

I did take a look at the CA PPM REST API and try to figure how it work using VBA in Excel. ( I am starting from very little knowledge in this area (REST API and VBA)).

In the attached 20 min video, you will see how from scratch you can use the CA PPM REST API to get data inside a spreadsheet... I did have a microphone issue recording the video... I used a free version of camtasia to assemble it with a new recorder audio.

I also include 2 files you can play with or modify (very basic).  
In two workbooks you will see how you can:


- Get a specific project data
- Get a project list
- Create a project


I really hope this can help some folks out there... I do not take any responsibility for the file... use it on dev or test environment.


If by any chance someone build something great from these two files... please shared them.

Eric,

ATTACHMENTS

 [RestAPIExample2.xlsx](#)  
152.7 KB [Preview](#)

 [BasicGetProjectExample.xlsx](#)  
17.9 KB [Preview](#)

 [CAPPM\\_RestAPI\\_withExcel.mp4](#)  
48.3 MB

# Samples

<https://communities.ca.com/thread/241757445>

LEARN HOW TO USE CA PPM REST API  
in 2 Minutes!



## WANT TO LEARN MORE ABOUT CA PPM REST API ?

If you are excited about the updates to the REST API in CA PPM V14.4 and would like to explore some of the REST API methods, Annitek will get you started using REST API in 2 minutes.

You will see how easy it is to work with REST even with minimal JavaScript knowledge.

## DETAILS OF A

Implementation Notes:  
Returns a list of projects

```
var projects = new Array();
var url = "https://api.ca.com/rest/v14.4/projects";
var http = new XMLHttpRequest();
http.open("GET", url, true);
http.setRequestHeader("Content-type", "application/json");
http.onreadystatechange = function() {
    if (http.readyState == 4) {
        if (http.status == 200) {
            projects = JSON.parse(http.responseText);
        }
    }
};
http.send();
```





# DEMO - Samples

# DEMO - Samples

# DEMO - Samples

# DEMO - Samples



A word cloud featuring the phrase "Thank You" in numerous languages and scripts. The words are arranged in a circular pattern, with "thank you" in large red letters at the center. Other prominent words include "danke" (blue), "teşekkür ederim" (pink), "gracias" (green), "obrigado" (green), "merci" (orange), "dank je" (green), "dziękuję" (pink), "sukriya" (purple), "kop khun krap" (green), "arigatō" (pink), "tak" (green), "dakujem" (orange), "merci" (orange), "danke" (blue), "teşekkür ederim" (pink), "gracias" (green), "obrigado" (green), "merci" (orange), "dank je" (green), "dziękuję" (pink), "sukriya" (purple), "kop khun krap" (green), "arigatō" (pink), "tak" (green), "dakujem" (orange), "merci" (orange), "danke" (blue), "teşekkür ederim" (pink), "gracias" (green), "obrigado" (green), "merci" (orange), "dank je" (green), "dziękuję" (pink), "sukriya" (purple), "kop khun krap" (green), "arigatō" (pink), "tak" (green), "dakujem" (orange), "merci" (orange). The colors used include blue, pink, green, orange, purple, and yellow. The fonts vary in size and style, creating a dynamic and colorful composition.






## Jose Antonio García Blázquez

Sr. Principal Consultant – IT Governance

Joseantonio.garcia@ca.com

 [linkedin.com/company/ca-technologies](https://www.linkedin.com/company/ca-technologies)

 @cainc @ja\_garciab

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