RCESaskAssistance

Solution Documentation

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About this Project

This project aims to help the RCESaskatchewan community, a community that deals with trying to educate the local region of Saskatchewan on sustainable development as it relates to the united nations' 17 goals for sustainable development. One component of educating people on sustainable development in Saskatchewan is making them see that there is opportunity in Saskatchewan for sustainable development. The way that is thought to do this is through displaying the sustainable development projects going on in Saskatchewan that are recognized by RCESaskatchewan, as they do yearly a recognition award for sustainable developments in the province. These projects can be displayed for visitors of the RCESaskatchewan website to engage with.

This solution that visitors to the website will see is a table of projects, displaying the project name , a short intro about the projects, and what of the 17 sustainable development goals the project relates to. A visitor can filter out their choices of the projects they want to view with the search bar. As well as a

recognition award application form on the website that is connected to the solution and will eventually become project info that will populate the project table of the website.

From the perspective of the volunteers of the community what this solution entails is a solution that will provide an easier way to collect and interact with user data, such as for the purpose of mass emailing recognition award winners, as well as ways to filter and approve applications easily collaboratively with other volunteers without needing duplications of data/datasets that could lead to confusion on what is the current version of the data set. The solution will consist of the application form in the editor to which changes can be made to gain more or less data from visitors of the RCESaskwebsite. Volunteers will also interact with a spreadsheet program that will allow visitors to approve applications and have the project data ready to post on the Saskatchewan website in a manor of seconds. Though with the convenance of this solution may come challenges in changing the configuration. this document aims to give a full scope of the components of this solution including the functions used in the spreadsheet program so as to give the best understanding of how the program works so that if changes are need to add new functionality future technology directors will have a better understanding of how the system works.
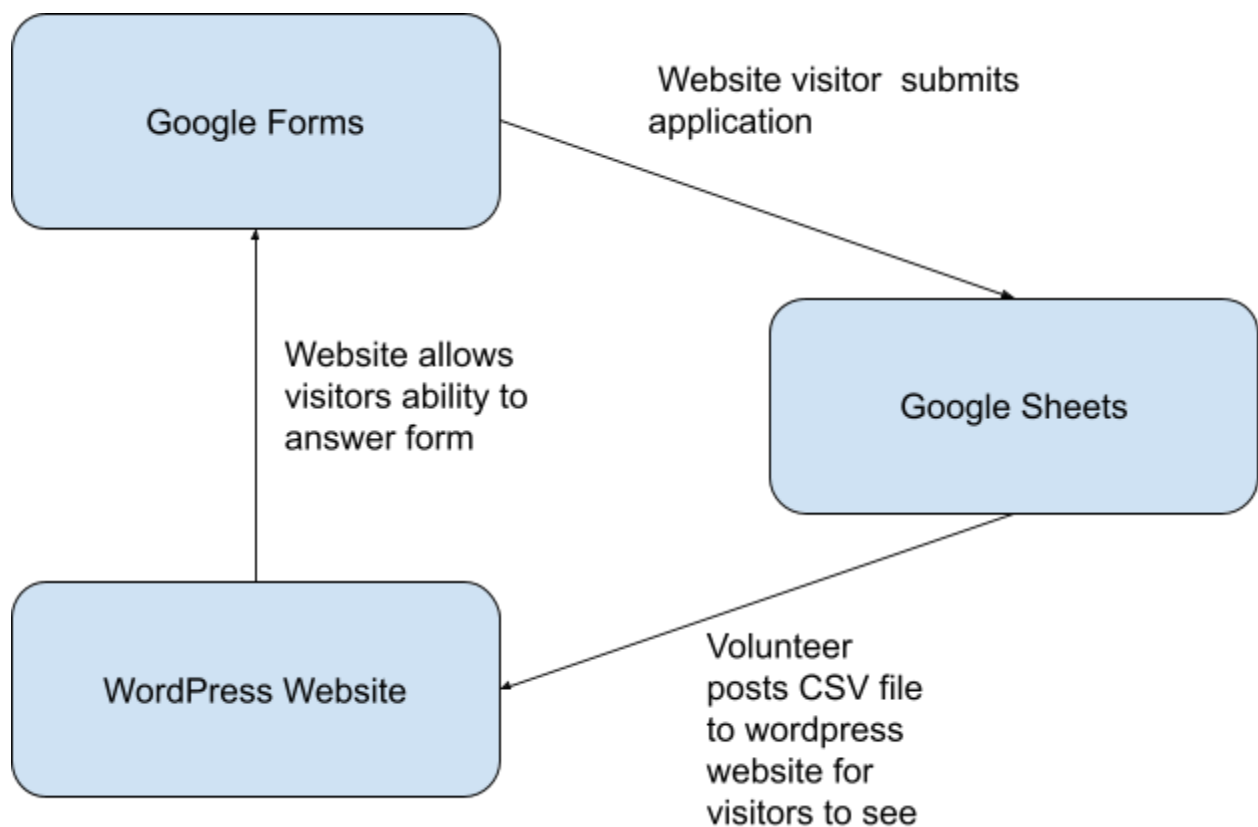
Components of the solution

Google Forms

Website visitor submits application

Google Sheets

Website allows visitors ability to answer form

WordPress Website

Volunteer posts CSV file to wordpress website for visitors to see

Fig 1: Simplified connections of components of solution

Google Forms

Google forms is an online software for forms and applications , it provides a form creation interface that seems simple to use to create forms, that includes common form question times such as paragraph answers , checkbox answer ect. It also provides elements such as a captcha system to avoid robot answers. There are ways of confirming to the person filling out the form that their application was submitted, such as sending a copy of their application to their email. Finally , all answers to the form can be sent to google sheets automatically so that answers can be sorted out and filtered from.

Google Sheets

Google Sheets is an online spreadsheet program that is used for storinging , and organizing data in a table format, it features several functions to apply to your data to sort and filter it for different purposes.being part of the google ecosystem means it can be automatically filled by answers to google forms. Spreadsheet programs utilize a common media type called comma separated values(CSV), this means data entered can easily be migrated from one spreadsheet program to another.

WordPress (wpDataTables plugin)

Wordpress is a website building program , it's greatest advantage is the ability to use plugins , these are community built features built by and for the community, these plug ins can be supported over their lifetimes by the creators to continue to function no matter the changes to wordpress or the browsers it functions on. For this solution, the wordpress plugin that is used is called wpDataTables it is a plugin that is used in 70,000+ different wordpress websites. The features that are important in the free version of this table plug in is that it allows data to be input from a CSV file. Next, the formatting of how a table that is displayed to the visitors of the website seems to be saved after first being set and saved, this means the data for the table can be swapped out easily without needing to change how it is displayed to viewers. Lastly, there is the ability to hide some columns of the table away from visitors of the website. This was useful in the solution to give visitors the ability to filter out data.

How to Implement the Current Solution

Form

First we can start with the creation of the form, this was done by copying the online form currently on the RCESaskatchewan website, this was a more simple task , google has designed the form creator to be a fairly easy tool to use with no real need to be technical still, there are two things to note about form

creation, one is creating sections, this ability allows one to chop up a form into more manageable pieces. The second thing to know is about response validation, where a check can be made on an answer, to make sure it adheres to some rules, these are called Regular Expressions or RegEx. RegEx is a more technical feature, But searching online is often a good way to find the wanted rules to follow.

Fig 2: Form Regular Expression

In the settings tab we can set email collection to be by Responder Input so that email is collected even if it is not a Gmail email address, as well there are the settings for email the response back to the recipient. Lastly, we can turn on the progress bar, this is a useful feature for forms with multiple sections to show people responding to the form how many more sections they have to go. Unfortunately, all other settings seem to need a person responding to this form to be signed into a GMail if we activate them.

Fig 3: Form Settings Tab

What is done next is adding a google spreadsheet to catch the response to the form. This can be added by going to the 'response' and adding a spreadsheet to this form. This tab also contains the ability to turn off and on the ability to accept responses.

Fig 4: Form Responses Tab

Next for the form we have ways to send the form to be answered by clicking the 'send' button at the top of the form builder. Next for the solution you have to go to the embedded table of the send pop up it looks like this: '<>'. For the width it is recommended that the width is 1200px and the height is 640px. What is copied here will be used in the later wordpress section.
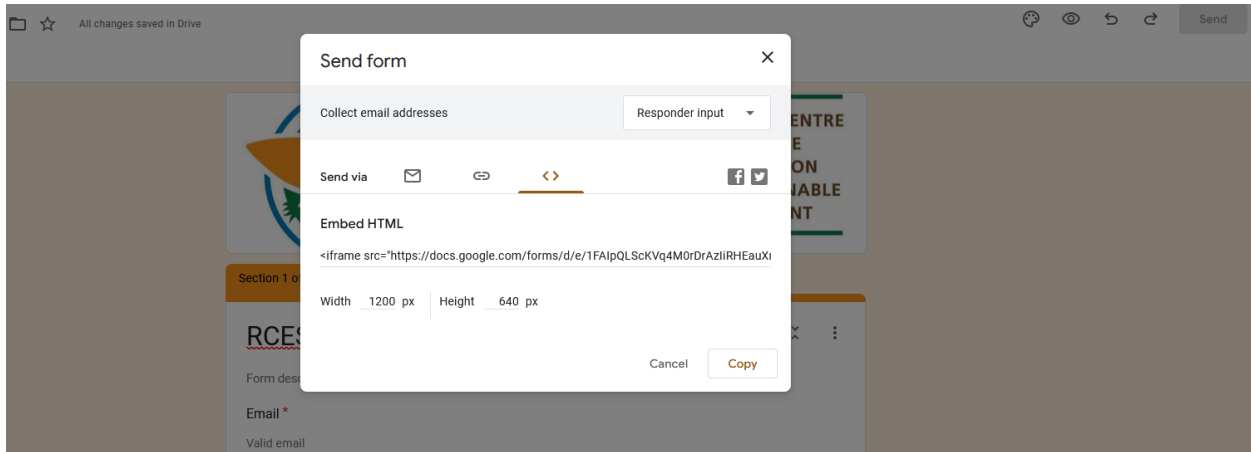
Fig 4: Form Send by Embedded HTML.

Sheets

Implementation

In the created google sheets file , we have the first sheet which is the responses to the google form. What I decided to do was shift all cells left by one by left clicking on the first cell A1 and left clicking and pressing 'insert 1 column left' we can then title this newly created column 'Accepted' in this column we have each row be reviewed by volunteers, when an application is accepted, the volunteer can make the the first column '=TRUE()' this is the first introduction of mathematical functions in the spreadsheet program that is useful for filtering information into more useful forms. If we want to reject the application we can make a column of the application row '=FALSE()'. This is the only edit that is made on this sheet for the file. This is because we want to keep newly entered data untouched and clean.

A2	▼	fx =TRUE()			
	A	B	C	D	E
1	Accepted	Timestamp	Email Address	Project Name	Was this project pursued by an individua a group of individuals o an organization?
2	TRUE	10/27/2023 15:17:53	elc475@uregina.ca	SPOT	a group of individuals
3		10/30/2023 13:28:54	elc475@uregina.ca	kjlkj	an organization
4		10/31/2023 15:08:43	elc475@uregina.ca	kjkjgkjg	individual
5		11/10/2023 19:25:18	elc475@uregina.ca	afdaf	a group of individuals
6		11/10/2023 19:33:42	elc475@uregina.ca	uyrru	a group of individuals
7		11/11/2023 17:22:48	elc475@uregina.ca	gjgjgjg	a group of individuals
	TRUE	1/1/2023		Utilizing Biocementation t Mitigate Calcite Formatio	a group of individuals

Fig 5: Sheets =TRUE()

At the bottom of the google sheets editor you can see the ability to add sheets to the file

+	≡	📋 Form Responses 1 ▾	Refine Responses ▾	Project Display ▾
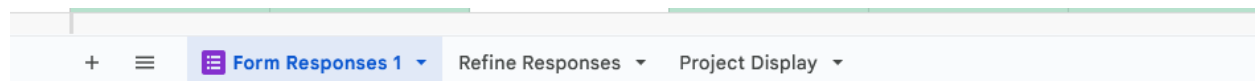
Fig 6: Sheets new sheet

In this way we can start to refine the data down while leaving the original responses intact, the refinement of responses is done automatically with different mathematical functions, all the volunteer would need to do is accept the application.

The next sheet 'Refine Responses' is used to check what sustainable goals a project deals with as well as gets one project link to present to website viewers.

First we get the information from the form responses, this is the project name , small sentence about the project, the block of the UN goals the project deals with , the three possible links to the project websites, and the question of if we can post the link on the website. In this case , this is done by query. Using the formula '=QUERY('Form Responses 1'!A1:AH,"SELECT D,V,Z,O,P,Q,R where A = TRUE AND A IS NOT NULL",1)'

Fig 7: Sheets Refine Query

This formula gets all of the information from the previous sheet that we just talked about, it will only get the information for a particular row when column A, the acceptance row is true , and not empty , this cuts down the data to only the needed data to be displayed to the visitors of the website. After the 7 filled columns from the query row H is where we start separating the 17 goals into their own cells , we do this by having each cell title be one of the 17 goals, exactly has entered in the form submission , that being:

1. No Poverty – end poverty in all its forms everywhere by 2030
2. Zero Hunger – end hunger, improve food security, nutrition and sustainable agriculture
3. Good Health and Well-being – promote healthy lives and well-being at all ages
4. Quality Education – lifelong, inclusive and quality education for all
5. Gender Equality – gender equality and empowerment of all girls and women
6. Clean Water and Sanitation – access to safe water and sanitation for all
7. Affordable and Clean Energy – affordable, sustainable, reliable and modern energy for all
8. Decent Work & Economic Growth – inclusive & sustainable economic growth & employment   9. Industry, Innovation and Infrastructure – resilient infrastructure and sustainable industrialization   10. Reduced inequalities – reduce inequality within and among countries
11. Sustainable Cities and Communities – inclusive, safe, resilient and sustainable communities   12. Responsible Consumption & Production – ensure sustainable consumption & production   13. Climate Action – take urgent action to combat climate change and its impacts
14. Life Below Water – conserve & sustainably use oceans, seas & marine resources
15. Life on Land – halt and reverse land degradation and biodiversity loss
16. Peace, Justice & Strong Institutions – promote just, peaceful & inclusive societies
17. Partnership for Sustainable Development Goals – revitalize partnerships for sustainability.

Fig 8: Sheets separate SDG

The function used is '=ARRAYFORMULA((IF(ISERR(SEARCH(LEFT(H$1,4),$C2:$C)),"",
TRUE()))))' this formula searches to see if the first few characters of the label above are in the block of
sustainable development goals that is in column C. if it is then it places true in the cell. This is done for
all of the 17 SGDs, the way the formula is structured makes this easily, we place this formula in cell H@
and using the blue circle at the bottom right of the cell to drag the formula into the rest of the 16 SGD
columns, the formula will change to accommodate the changing column titles
After this we have the project link. To keep the link active an clickable only one link can be chosen to
represent the project. The formula that decides this is :
'=ARRAYFORMULA(IF(G2:G="Yes",
IF(D2:D<>"",$D2:D,IF(E2:E<>"",E2:E,IF(F2:F<>"",F2:F,"")))),""))'.
From there the last Sheet is final refinement, this sheet gives names to all of the columns instead of the
questions that were part of the google form.
To solve this we first query the previous sheet for all the data using:
'=QUERY('Refine Responses'!A2:Y,"SELECT A,B,X,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,C WHERE
A IS NOT NULL",1)'.
The thing to note is that "'Refine Responses'!A2:Y" is starting from A2 not A1 so we can add our own
column titles. The last column of this sheet is the block of a Sustainability goals this project deals with ,
this is useful on the wordpress website when a visitor is looking to sort out the projects to ones dealing
with one topic.

Fig 9: Sheets SDG search block

While looking at the 'Project Display' Sheet , we can download the csv of just this sheet. This csv is the data we want to put in our Wordpress website. We will add this along with the google form in the next section.

Data Migration Tips

If you are a windows machine, you have access to windows powertoys text extractor for free.
Here is a tutorial on how to use it: https://www.youtube.com/watch?v=H6u635qcLtE
NOTE The extractor is not always 100% full proof, but text extraction is faster than copying via typing when copying and pasting is not an option. '

WordPress

WordPress is how we are hosting our website. Our first order of business is to add the form to the website , first we add a new page. In that we create a group and then add into that group a custom html block inside that block we add the form embedded code that we copied in figure 4.

Application

Type / to choose a block
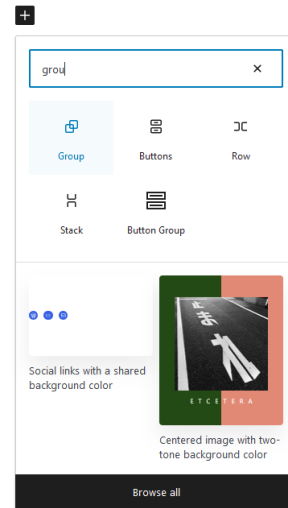
Fig 10: WordPress group

Application
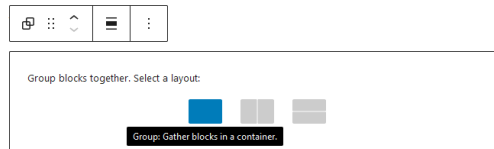
Fig 11: WordPress Container

Application
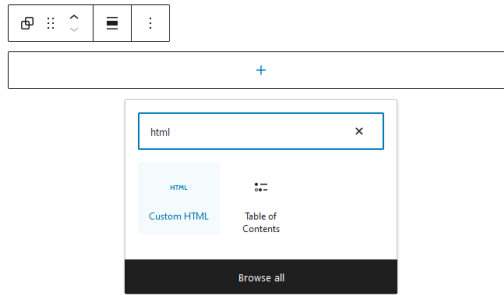
Fig 12: WordPress HTML

Application


```
<iframe src="https://docs.google.com/forms
/d/e/1FAIpQLScKVq4M0rDrAzIiRHEauXmMGfQWl8ahBF3wRykFSbNEeAdRlw/viewform?embedded=true"
width="1200" height="640" frameborder="0" marginheight="0" marginwidth="0">Loading…
</iframe>
```
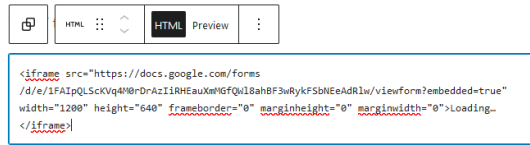
Fig 13: WordPress embedded

Application

RCESask Award Application

Sign in to Google to save your progress. Learn more

* Indicates required question

Email *

Your email

Project Name *

Your answer

Was this project pursued by an individual, a group of individuals or an
organization?   *

◯ individual

◯ a group of individuals

Fig 14: WordPress form

Next we need the wpDatatable plugin to be able to create a table
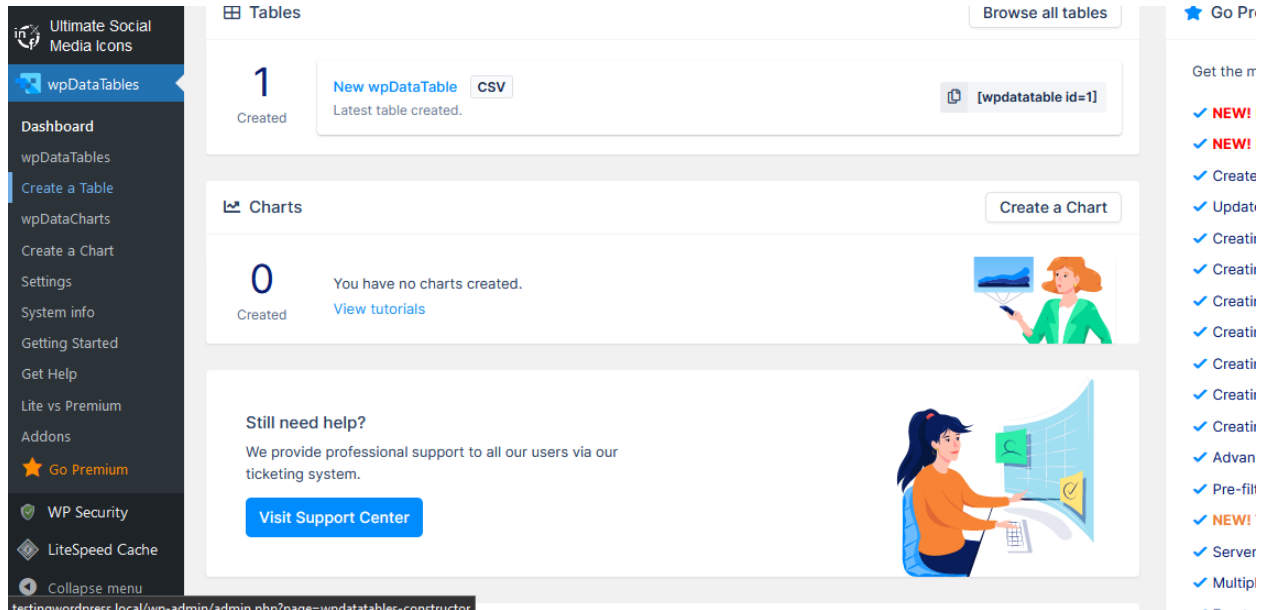
Fig 15: WordPress add table

We can add a table based on the table source , make it a csv that we can browse and upload to the wordpress website, clicking save loads the data into the wordpress table.
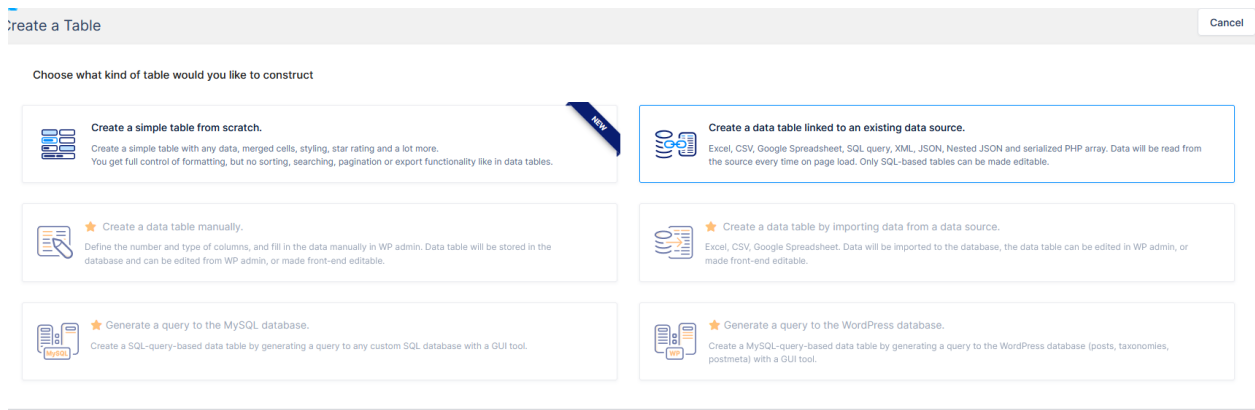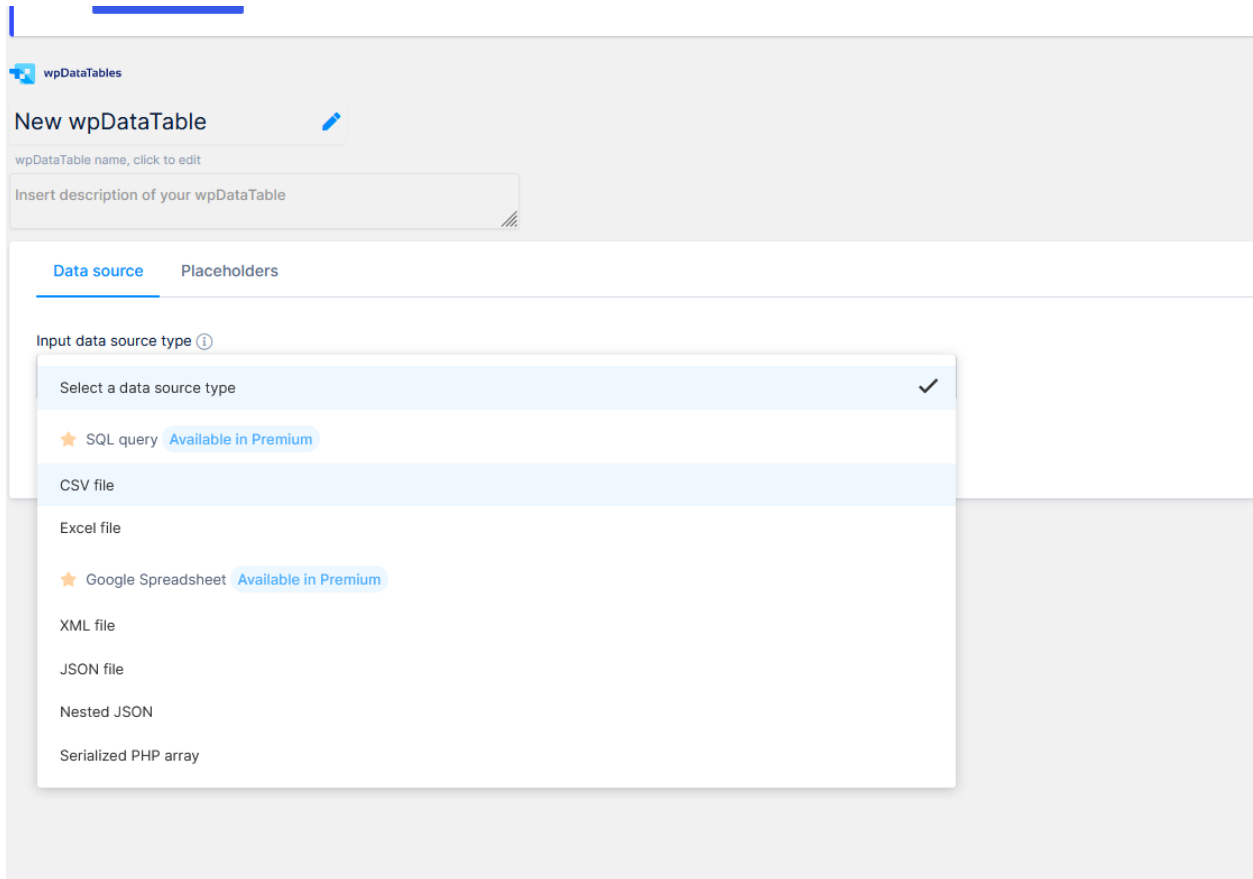
Fig 16: WordPress data select

Fig 17: WordPress CSV select

Fig 18: WordPress browse select

Select an Excel or CSV file

Upload files | Media Library

DROP FILES TO UPLOAD

or

Select Files

Maximum upload file size: 300 MB.

Fig 19: WordPress upload CSV

New wpDataTable

wpDataTable name, click to edit
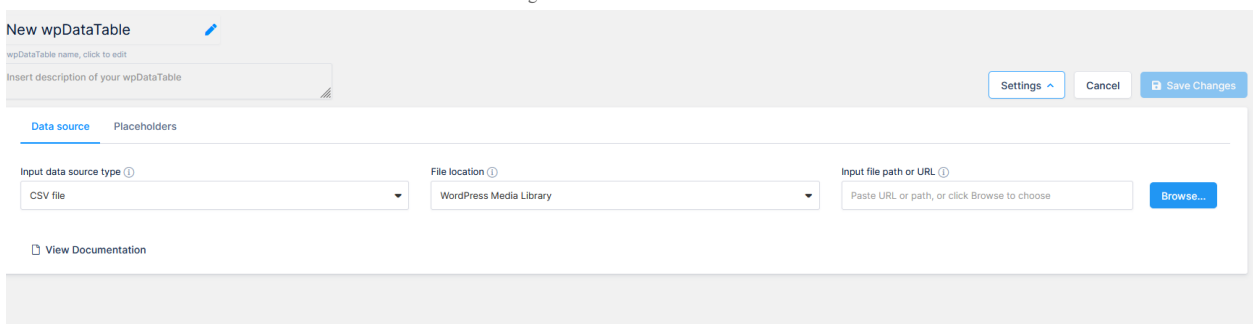
Insert description of your wpDataTable

Settings ⌃ | Cancel | 🔒 Save Changes

Save Changes

Data source | Display | Sorting and filtering | Table Tools | Placeholders | NEW! Customize | NEW! Advanced

Input data source type ⓘ
CSV file ▾

File location ⓘ
WordPress Media Library ▾

Input file path or URL ⓘ
http://testingwordpress.local/wp-content/uploads/2023/10/R(| Browse...

📄 View Documentation

Fig 20: WordPress save CSV

We can do a few things to edit the table , such as making the project name column width 10% , make the About column width 10% and the project link column 5%.

Fig 21: WordPress Project Name

Fig 22: WordPress About

Fig 23: WordPress project links

Next clicking on the 'Column List' button , scroll to the bottom of the list of columns and make 'SGD Search Block' invisible. Next we can go into the display tab , unclick "show table title on page" then click " limit page width to page" now a new selection "wrap words to newlines" which we can select. And save all changes

Table preview and columns setup

Complete column list

★ f(x) Add a Formula Column

Column List

Print Excel CSV Copy

Show 10 entries

Search:

Project Name	About Project	Project links	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	SGD Search Block
																				1. No Poverty – end poverty in all its forms everywh... by 2030, 2. Zero Hunger – end hunger, improve food

Fig 24: WordPress column list button

Fig 25: WordPress Column list

Fig 26: WordPress display settings

 Finally we can copy the short code for this table. Now in a new page we can add a new shortcode element , transform it into a column and set the width of the column to full width. We then add the short code to the text box and update it. This is the full extent of implementing this solution.

Fig 27: WordPress shortcode copy
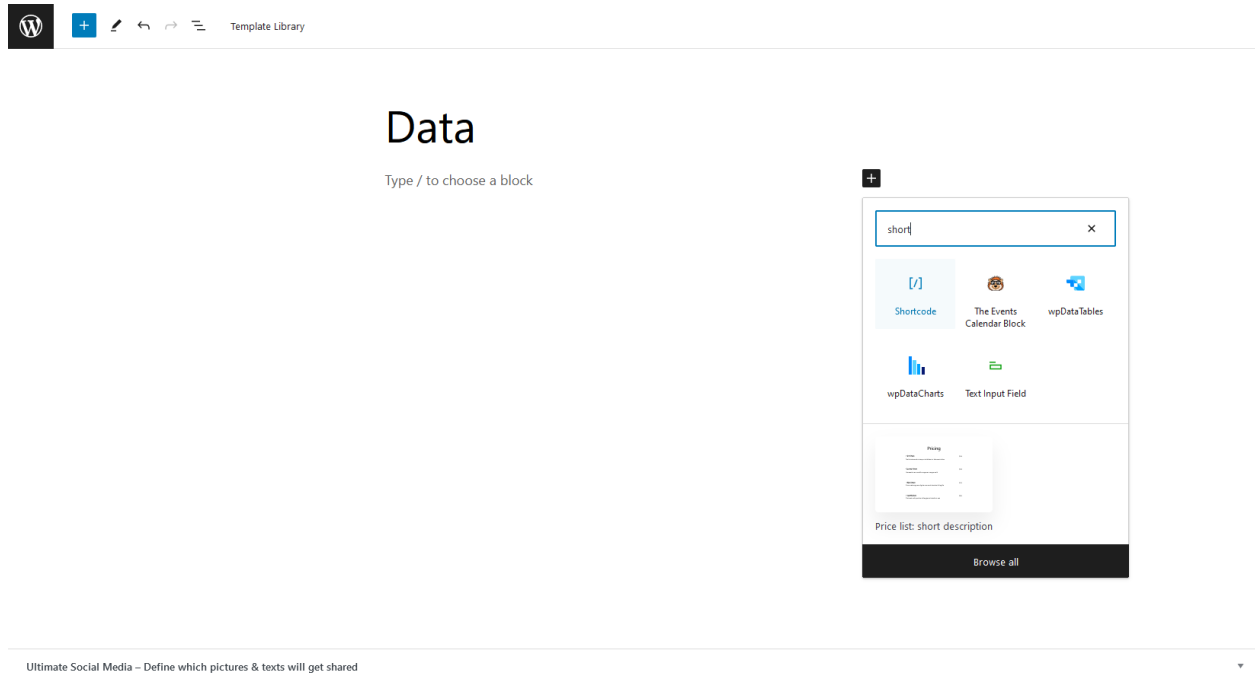
Fig 28: WordPress shortcode block
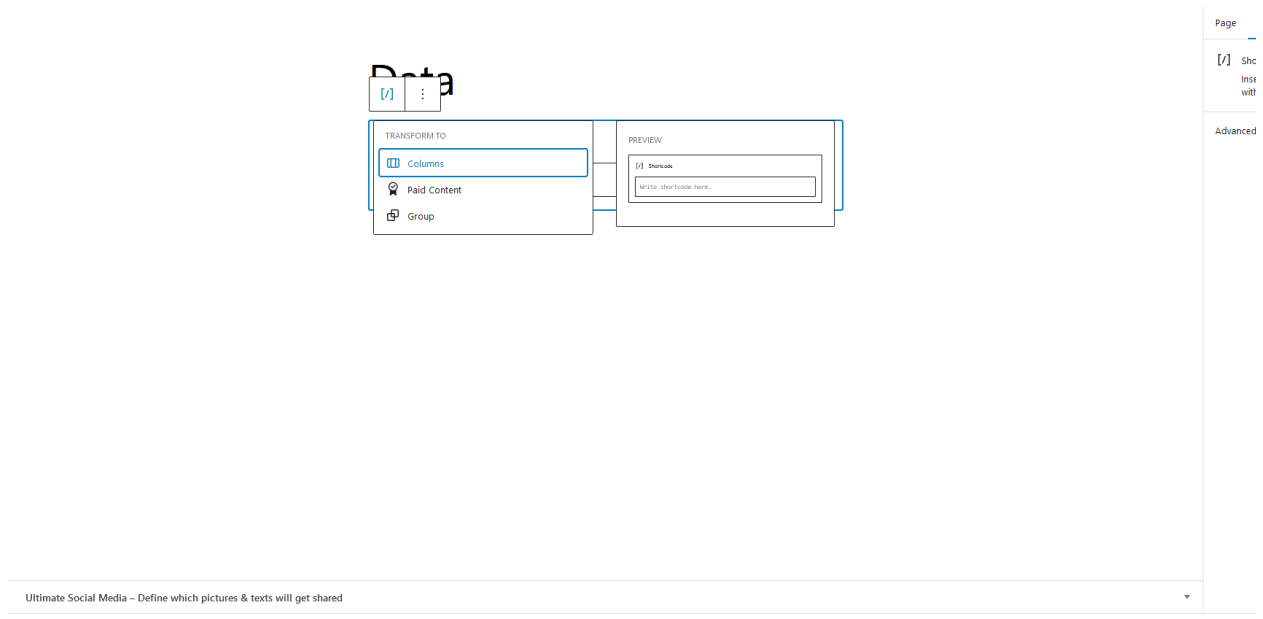
Fig 29: WordPress shortcode column transform

Data

None
Max 650px wide
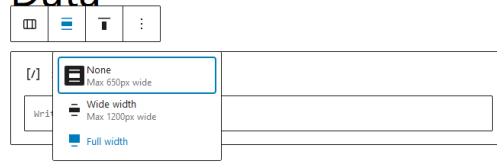
Wide width
Max 1200px wide

Full width

Ultimate Social Media – Define which pictures & texts will get shared

Fig 30: WordPress full width

Data

[/] Shortcode

[wpdatatable id=2]

Sho
Inse
with

Advanced

Ultimate Social Media – Define which pictures & texts will get shared

Page > Columns > Column > Shortcode

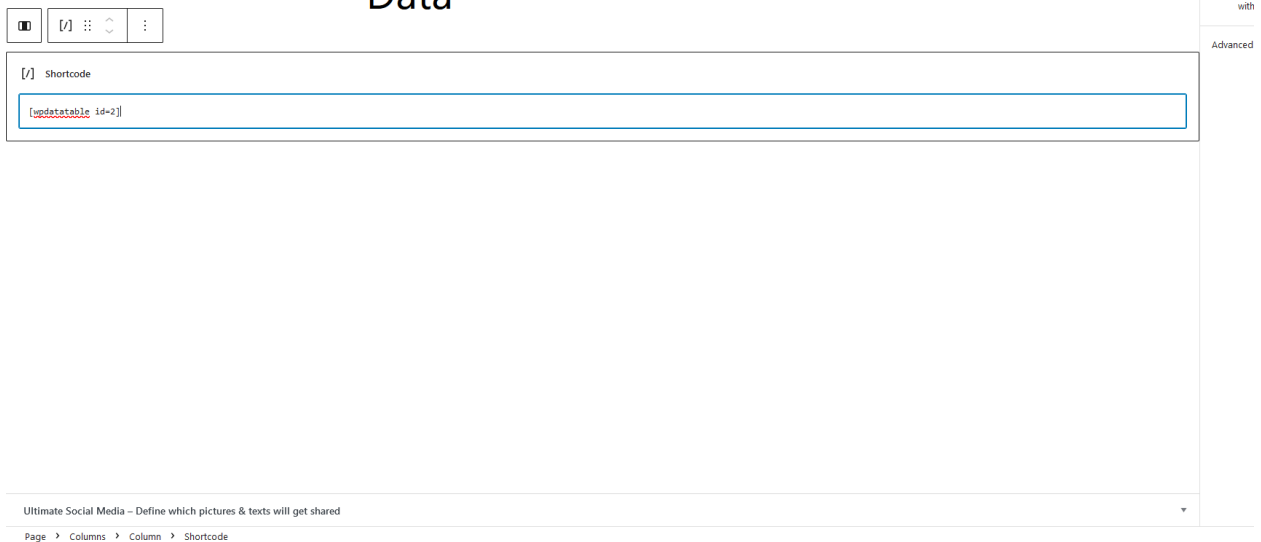Fig 31: WordPress shortcode add

Data

Print Excel CSV Copy

Show 10 entries   Search:

Project Name ▲	About Project ▲	Project links ▲	1 ▲	2 ▲	3 ▲	4 ▲	5 ▲	6 ▲	7 ▲	8 ▲	9 ▲	10 ▲	11 ▲	12 ▲	13 ▲	14 ▲	15 ▲	16 ▲	17 ▲
kjkjgkjg	hklkhlhlklkhl		TRUE	TRUE	TRUE	TRUE					TRUE	TRUE	TRUE						
SPOT	SPOT is an AI assisted medical diary that focuses on analyzing and classifying skin spots.	https://github.com /ericchartier4 /Capstone-2022-Team-Crab			TRUE														
URSU cares	URSU Cares is a program that provides sustainable food and clothing options to low income and marginalized		TRUE	TRUE	TRUE				TRUE			TRUE		TRUE					

Fig 32: WordPress table display

Spreadsheet Formulas

This section of the solution guide is to try to explain all of the formulas used in the google spreadsheets. Formulas are made up of a combination of formulas. A full list of which can be found here:
https://support.google.com/docs/table/25273?hl=en
Along with cell references that help formulas interact with the data cells. A list of the reference types can be found here: https://edu.gcfglobal.org/en/googlespreadsheets/types-of-cell-references/1/#

=QUERY('Form Responses 1'!A1:AH,"SELECT D,V,Z,O,P,Q,R where A = TRUE AND A IS NOT NULL",1)

This formula from cell A1 of "Refine Responses" is a query to a separate data set, in this case from a sheet called "Form Responses 1". And it includes data from cells A1:AH this will include all rows of A to AH including new rows added to the "Form Responses 1" as long as that data is in columns A1:AH. From there we can select specific column of data to include and from those selected we can further filter them out, in this case, include entries from the form where column A is =TRUE(). And column A is not empty.

=ARRAYFORMULA((IF(ISERR(SEARCH(LEFT(H$1,4),$C2:$C)),"",
TRUE()))))

This formula , from cell H2 of the "Refine Reponses" sheet helps separate out the SGDs a project deals with into their own column. The outer formula is an ARRAYFORMULA(formula) meaning this formula is applied to every row of this column. Next we have an IF(expression,if_true,if_false) that will fill in the cell based on if the expression is true or not. The expression we are evaluating ISERR(expression). Which will return true if there is something wrong with trying to evaluate the expression and the evaluation return #ERR. In this case we are doing a SEARCH(value1.value2). This will return TRUE() if value1 is found in value2. For this example we are looking at the first 4 characters of the title of the column using the LEFT(Cell_Number,Number_of_characters) to see if it is in the cell we are searching in , in this case it is cell C2, contains 4 characters of the title of the column. The way this formula is structured in terms of how it references cells helps to add this formula quickly to all 17 columns of the SGD using the method mentioned above for implementing the google sheet.

=ARRAYFORMULA(IF(G2:G="Yes",
IF(D2:D<>"",$D2:D,IF(E2:E<>"",E2:E,IF(F2:F<>"",F2:F,"")))),"")'.

This next formula from cell Y2 of "Refine Responses" sheet is for getting one of the project links to display, only one link can be displayed at one time while maintaining the ability to be clicked on, what this does is finds the first non blank link of the submission and adds it to this cell

=QUERY('Refine Responses'!A2:Y,"SELECT
A,B,X,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,C WHERE A IS NOT
NULL",1)

This query formula is from A2 of the "Project Display" Sheet, like the last Query formula , except this formula leaves row 1 blank so as to add our own column titles.

Tips and Tricks

Tip for mass emailing award recipients.

Collection of emails can be very quick using the Spreadsheet, first you need to create a filter on the "Form Recipant 1" Sheet this can be done by pressing the funnel icon at the top right of the program.

Fig 33: Sheets create filter

Next we can apply two filters one on the "Acceptance Column" A, this is done by clicking the three horizontal lines at the top of each column name. And we can select that we only want to filture for those that are TRUE() and not (Blank)

Fig 34: Sheets Acceptance

Next we can set another filter on the "Timestamp" Column B. We can filter the condition, and have it be all submissions between two dates. For example, if we wanted the 2023 recipients we would look at every submission submitted between the 2022 deadline, which I assumed to be mach 3, 2022, or 3/31/2022, and the 2023 application deadline 3/31/2023 as well as leave off all (blank) cells. What we should have left is our accepted submissions for 2023. We can copy the emails by clicking the top of the email column, Column C in this case, and press cntrl+c, to copy all email addresses which we can paste into our email

** NOTE** For entries we have to migrate into the data sheet, we can set the timestamp as january 1 of the year they submitted/ won the award such as 1/1/2023 for 2023 award recipients or 1/1/2022 for 2022 recipients.

Fig 35: Sheets Timestamp

Fig 36: Sheets Copy Email

Fig 37: Sheets Email Paste

About Adding New Questions to the Form

Recently I was asked about adding more questions to the form, and it got me thinking about how adding questions to the form will affect the google sheets spreadsheet, to my delight adding a question to the form adds the answer column to the end of the goog;e sheet, meaning the formulas that are currently embedded in the google sheets cells will stay active as the new questions will not affect the pre-existing spreadsheet cells.

Fig 38: new question City/Town

Fig 39: new column City/Town