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Gain control over your data with row ID management

v.07/16

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Learning Objectives

- Understand what row ID management is and why it is beneficial to wide variety of Smartsheet solutions.
- Deep dive into the various types of row ID management, and explore the formulas and functionality that make them work.
- Apply row ID management fundamentals to a global solution with scaling and portfolio reporting capabilities

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What is Row ID Management?

And why should I use it?

What is row ID management?

Essentially, labels for reference.

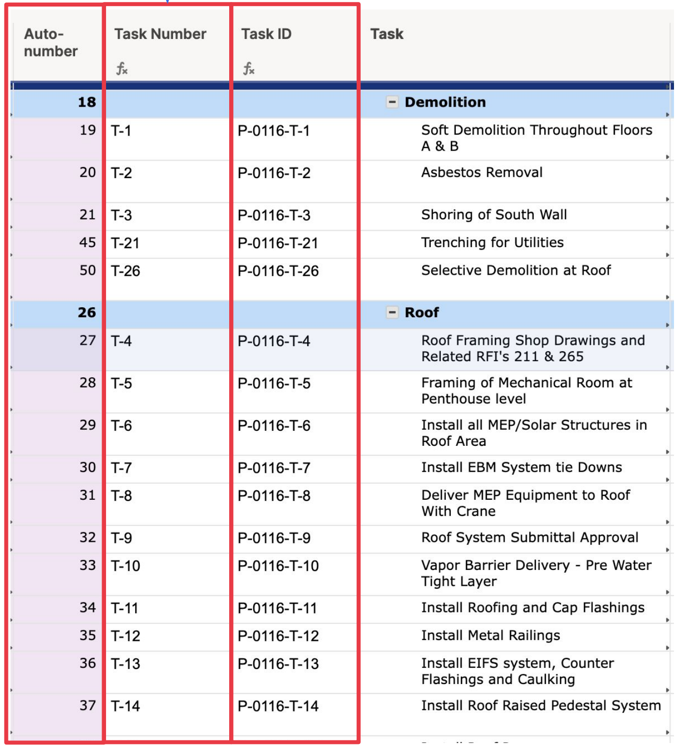
Row ID management assigns unique labels to Smartsheet data, allowing for clear identification of rows. This simplifies tasks such as:

- Reporting and metrics
- Organizing and sorting
- Filtering
- Locating data

Without it, Smartsheet data can become:

- Hard to scale
- Difficult to organize
- Vulnerable to data integrity issues

These are forms of row IDs



Auto-number	Task Number	Task ID	Task
18			**Demolition**
19	T-1	P-0116-T-1	Soft Demolition Throughout Floors A & B
20	T-2	P-0116-T-2	Asbestos Removal
21	T-3	P-0116-T-3	Shoring of South Wall
45	T-21	P-0116-T-21	Trenching for Utilities
50	T-26	P-0116-T-26	Selective Demolition at Roof
26			**Roof**
27	T-4	P-0116-T-4	Roof Framing Shop Drawings and Related RFI's 211 & 265
28	T-5	P-0116-T-5	Framing of Mechanical Room at Penthouse level
29	T-6	P-0116-T-6	Install all MEP/Solar Structures in Roof Area
30	T-7	P-0116-T-7	Install EBM System tie Downs
31	T-8	P-0116-T-8	Deliver MEP Equipment to Roof With Crane
32	T-9	P-0116-T-9	Roof System Submittal Approval
33	T-10	P-0116-T-10	Vapor Barrier Delivery - Pre Water Tight Layer
34	T-11	P-0116-T-11	Install Roofing and Cap Flashings
35	T-12	P-0116-T-12	Install Metal Railings
36	T-13	P-0116-T-13	Install EIFS system, Counter Flashings and Caulking
37	T-14	P-0116-T-14	Install Roof Raised Pedestal System

Why does row ID management matter?

Do the benefits justify the investment?

- **Scalability**

  As business processes grow in complexity, the need to manage and associate large volumes of data across multiple sheets becomes critical. Unique identifiers make this process scalable and manageable.

- **Consistency & Integrity**

  When multiple sheets are linked or associated, unique identifiers ensure that data remains consistent across all sheets. Any changes or updates made in one sheet can be accurately reflected in others using the unique ID.

- **Deduplication**

  A unique identifier ensures that each row represents a distinct entity or record. This can help identify and remove duplicate entries that can lead to inaccurate analysis and reporting.

- **Precision & Interfacing**

  When working in Smartsheet Bridge or a custom API solution, data retrieval and correlation can become easier and much more precise.

When is row ID management not needed?

You may not need it, but you might wish you had it...

- Organizational rows, metadata rows, metric formula rows are often not necessary to have IDs assigned
- One-off sheets that do not have potential to become part of a larger process
- You enjoy making things difficult

Note that even seemingly low impact sheets can expand in usage - it's great to have unique IDs built in from the start!

Example sheets that benefit from row ID

- Project Intake Sheets
- Project Task Lists
- Project Schedules
- Inventory Trackers
- Event Planners
- Employee Directories
- Vendor Contact Lists
- Allocation Trackers
- And much, much more

Unique Identifiers for use in complex solutions

Attaching universal handles to your data

When our solution has unique IDs for each data point, we gain the ability to easily manage our data in ways that were cumbersome or impossible otherwise. Creating precise ID systems allows our processes to be more efficient and easier to manage as the solution grows.

Unique IDs are useful any solutions that use tools such as:

- Formulas
- Reports
- Data Mesh
- Data Shuttle
- Data Table
- Bridge
- Custom API Solutions
- Connections to other platforms

Types of row ID management

There are 3 primary forms that row ID management will take.

- **Permanent row IDs:** These represent the Smartsheet row object itself. These IDs never change and are completely unique across Smartsheet.

- **Dynamic row IDs:** These serve as labels that help to visualize and organize the data in our sheet based on its current state. They are subject to change as data is added, removed, or reorganized within the sheet

- **Permanent record IDs:** These IDs represent data points in Smartsheet, such as tasks, projects, resources, events, etc. Permanent record IDs can exist on multiple sheets simultaneously, but even when they are used in multiple places, the always reference a singular unique data point. These are similar to primary keys in a database.

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Permanent Record IDs

Permanent record IDs identify a unique data point managed through Smartsheet, such as tasks, projects, and events

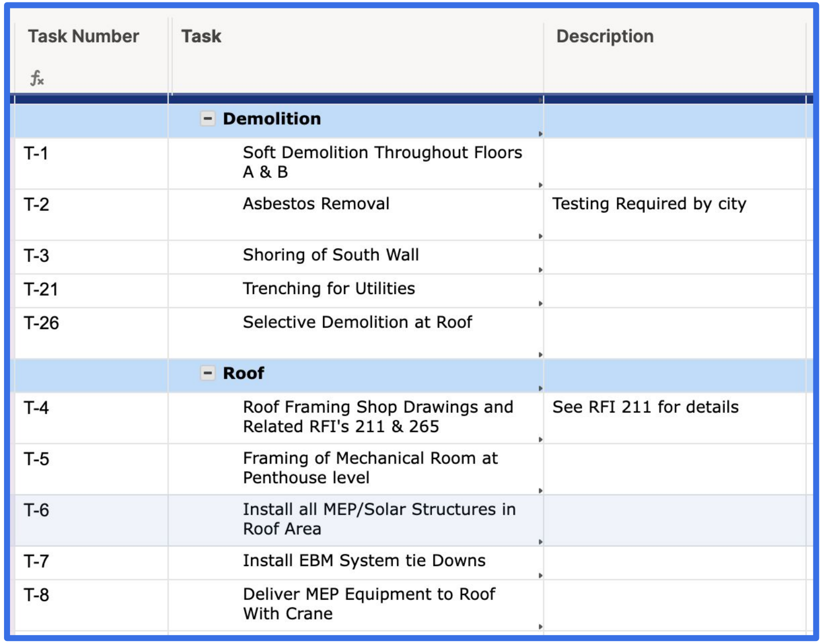
Permanent Record IDs

Identifying data points not tied to a row object

Permanent record IDs represent **a data point that is managed in Smartsheet**. This could be a task, project, resource, event - anything you manage in Smartsheet that can be uniquely identified.

Unlike permanent row IDs, **permanent record IDs do not identify a row object** - they identify the data point that the row displays. There can also be multiple different rows across various sheet all references the same unique data point.

Permanent record IDs allow us to correlate instances where the same data point is referenced in multiple locations.



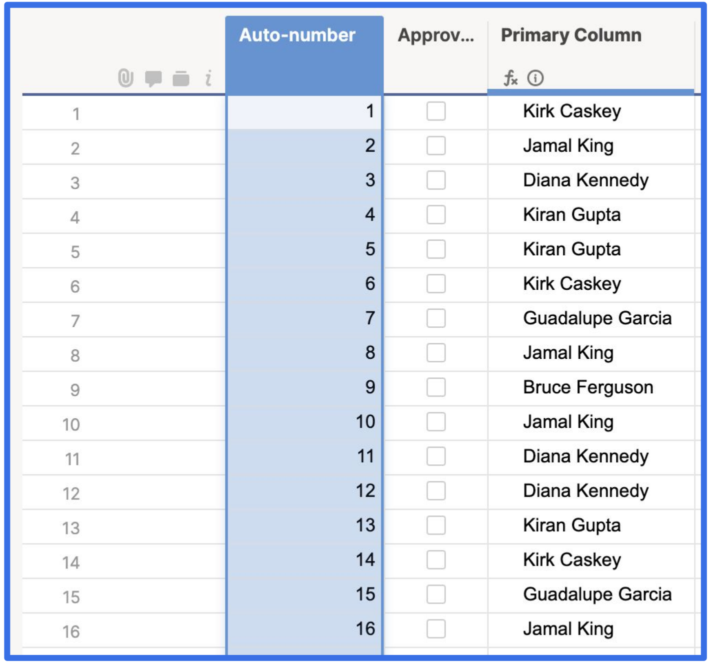
Task Number	Task	Description
	− **Demolition**	
T-1	Soft Demolition Throughout Floors A & B	
T-2	Asbestos Removal	Testing Required by city
T-3	Shoring of South Wall	
T-21	Trenching for Utilities	
T-26	Selective Demolition at Roof	
	− **Roof**	
T-4	Roof Framing Shop Drawings and Related RFI's 211 & 265	See RFI 211 for details
T-5	Framing of Mechanical Room at Penthouse level	
T-6	Install all MEP/Solar Structures in Roof Area	
T-7	Install EBM System tie Downs	
T-8	Deliver MEP Equipment to Roof With Crane	

Auto-Number

The most basic Record ID

With the auto-number column, each row that gets created will be automatically assigned the next ID value in the sequence. If the row is moved within the sheet, the number will not changed. If the row is deleted, that number will be gone from the list of numbers forever (almost).

Autonumber will often be a component of, basis for, or used in conjunction with other types of permanent record IDs.



	Auto-number	Approv...	Primary Column
1	1	□	Kirk Caskey
2	2	□	Jamal King
3	3	□	Diana Kennedy
4	4	□	Kiran Gupta
5	5	□	Kiran Gupta
6	6	□	Kirk Caskey
7	7	□	Guadalupe Garcia
8	8	□	Jamal King
9	9	□	Bruce Ferguson
10	10	□	Jamal King
11	11	□	Diana Kennedy
12	12	□	Diana Kennedy
13	13	□	Kiran Gupta
14	14	□	Kirk Caskey
15	15	□	Guadalupe Garcia
16	16	□	Jamal King

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Permanent Record IDs

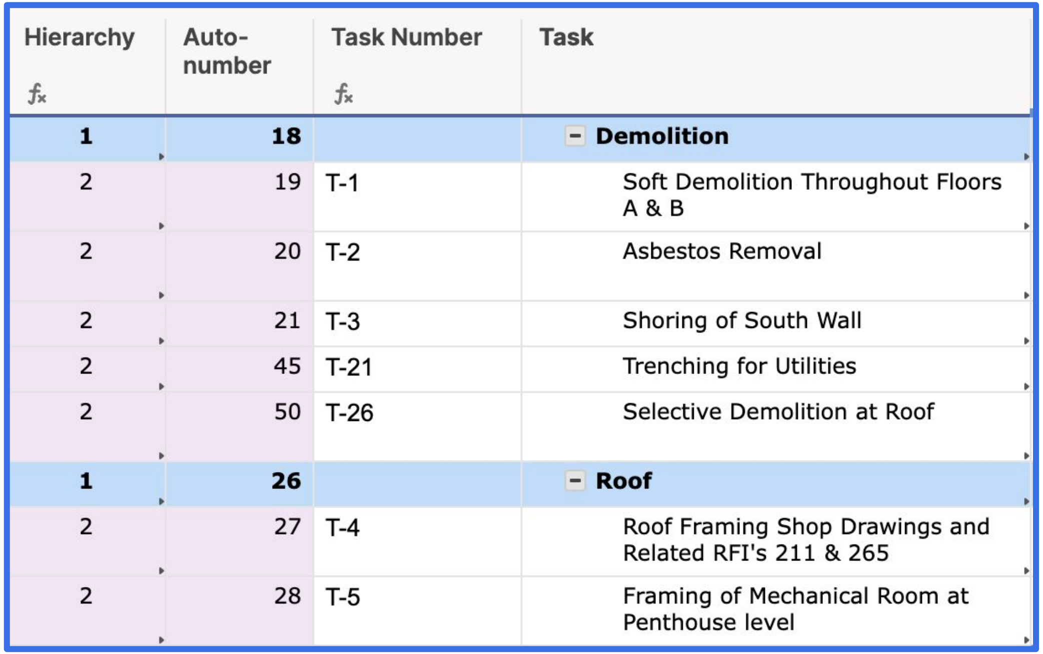
Hierarchy formula

An example of a Permanent Record ID would be assigning a unique identifier to task in a Project sheet. Each task represents a distinct planned event.

To make a task ID possible, we will first add a hierarchy formula. The Hierarchy formula allows us to assign task numbers only to tasks, and not to any organizational rows:

```
=COUNT(ANCESTORS())
```

This formula helps provide an indicator of what hierarchy level a row exists at.



Hierarchy	Auto-number	Task Number	Task
1	**18**		⊟ **Demolition**
2	19	T-1	Soft Demolition Throughout Floors A & B
2	20	T-2	Asbestos Removal
2	21	T-3	Shoring of South Wall
2	45	T-21	Trenching for Utilities
2	50	T-26	Selective Demolition at Roof
1	**26**		⊟ **Roof**
2	27	T-4	Roof Framing Shop Drawings and Related RFI's 211 & 265
2	28	T-5	Framing of Mechanical Room at Penthouse level

Permanent Record IDs

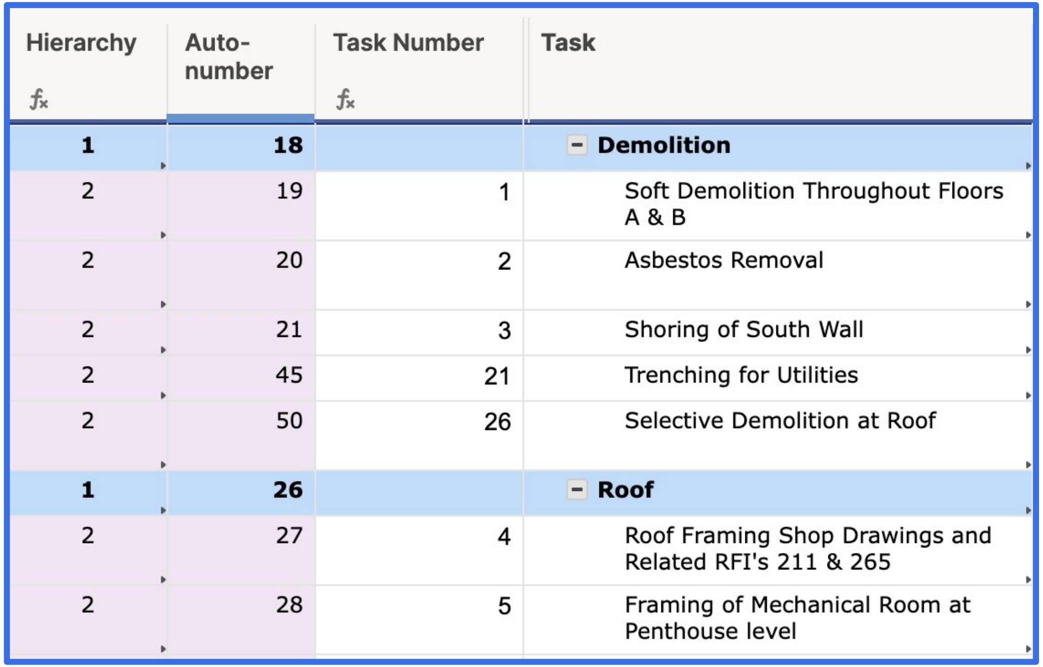
RANK and COLLECT functions

Because the auto-number column is guaranteed to have all unique values, we can RANK the auto-number column to get a sequential number for every new task.

=RANKEQ([Auto-number]@row, COLLECT([Auto-number]:[Auto-number], Hierarchy:Hierarchy, @cell > 1), 1)

This also includes a COLLECT() function to help gather a range of only rows on a Hierarchy greater than 1, to ensure we are only labeling tasks.

NOTE: Although this is referred to as "permanent", it can be altered by mistake! Make sure only the correct users are assigned as admins in the sheet.



Hierarchy *fx*	Auto-number	Task Number *fx*	Task
1	**18**		− **Demolition**
2	19	1	Soft Demolition Throughout Floors A & B
2	20	2	Asbestos Removal
2	21	3	Shoring of South Wall
2	45	21	Trenching for Utilities
2	50	26	Selective Demolition at Roof
1	**26**		− **Roof**
2	27	4	Roof Framing Shop Drawings and Related RFI's 211 & 265
2	28	5	Framing of Mechanical Room at Penthouse level

Permanent Record IDs

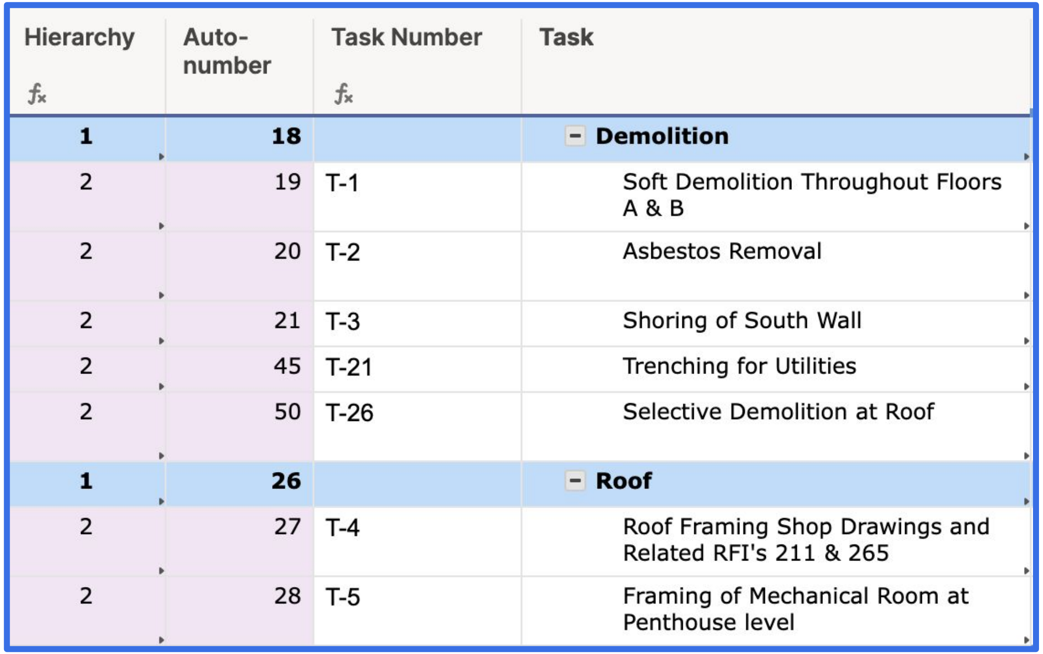
Appending text labels

Finally, we can add additional text to help format the text number that makes visual sense.

=IFERROR("T-" + RANKEQ([Auto-number]@row,
COLLECT([Auto-number]:[Auto-number], Hierarchy:Hierarchy,
@cell > 1), 1), "")

In this case we add “T-” before every task number which serves as a visual indicator that the ID is task related.

This works well for identifying rows on a single sheet, but what if there are multiple projects each with tasks? We don’t want task IDs across projects to share the same number, since tasks on different projects are different unique task events.



Hierarchy ƒx	Auto-number	Task Number ƒx	Task
1	18		− Demolition
2	19	T-1	Soft Demolition Throughout Floors A & B
2	20	T-2	Asbestos Removal
2	21	T-3	Shoring of South Wall
2	45	T-21	Trenching for Utilities
2	50	T-26	Selective Demolition at Roof
1	26		− Roof
2	27	T-4	Roof Framing Shop Drawings and Related RFI's 211 & 265
2	28	T-5	Framing of Mechanical Room at Penthouse level

3

Dynamic Row IDs

Dynamic row IDs are labels used to indicate current relative state of a data point in Smartsheet

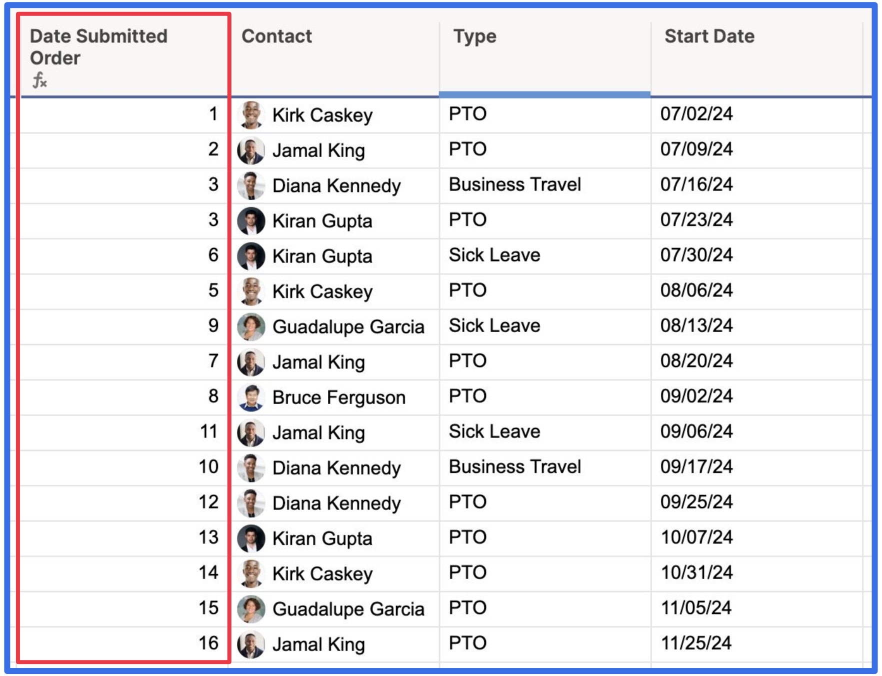
Dynamic Row IDs

Identifying current state of data

Dynamic row IDs represent a **temporary status of a row**. This could be the position of the row, the rank of a certain row value relative to other rows, etc.

Dynamic row IDs are **not suitable for identifying the row object itself**, or the datapoint that the row represents. They identify a current state of the row. This is because dynamic row IDs can constantly be changing.

Dynamic row IDs are extremely useful for **identifying and actioning rows** based on their current status.

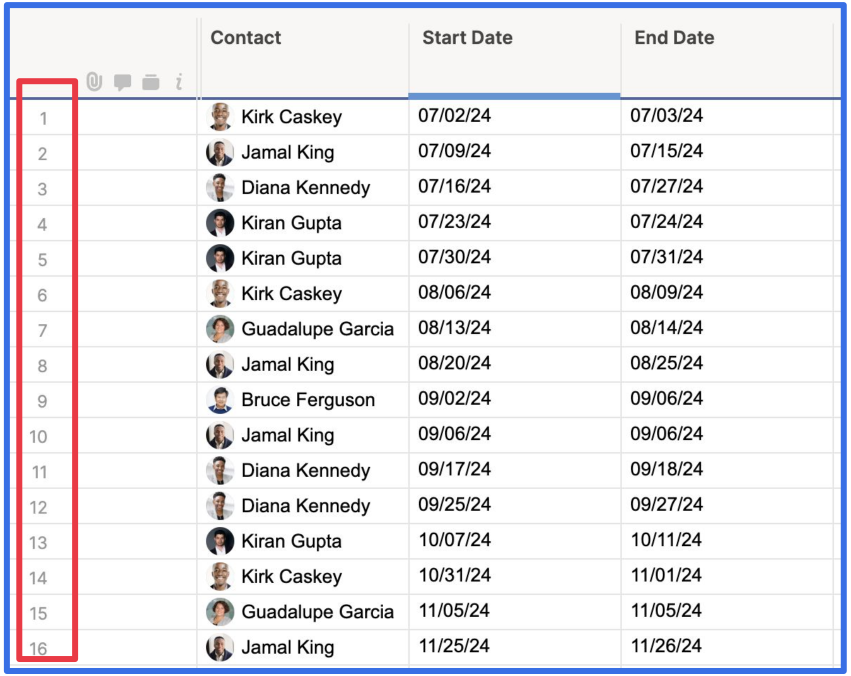


Date Submitted Order *fx*	Contact	Type	Start Date
1	Kirk Caskey	PTO	07/02/24
2	Jamal King	PTO	07/09/24
3	Diana Kennedy	Business Travel	07/16/24
3	Kiran Gupta	PTO	07/23/24
6	Kiran Gupta	Sick Leave	07/30/24
5	Kirk Caskey	PTO	08/06/24
9	Guadalupe Garcia	Sick Leave	08/13/24
7	Jamal King	PTO	08/20/24
8	Bruce Ferguson	PTO	09/02/24
11	Jamal King	Sick Leave	09/06/24
10	Diana Kennedy	Business Travel	09/17/24
12	Diana Kennedy	PTO	09/25/24
13	Kiran Gupta	PTO	10/07/24
14	Kirk Caskey	PTO	10/31/24
15	Guadalupe Garcia	PTO	11/05/24
16	Jamal King	PTO	11/25/24

Dynamic Row IDs

Row Number

The built in example of a dynamic row ID is the row number feature built into every sheet. These identify the position of the row, but do not identify the content of that row, since the row could be moved at any time.



	Contact	Start Date	End Date
1	Kirk Caskey	07/02/24	07/03/24
2	Jamal King	07/09/24	07/15/24
3	Diana Kennedy	07/16/24	07/27/24
4	Kiran Gupta	07/23/24	07/24/24
5	Kiran Gupta	07/30/24	07/31/24
6	Kirk Caskey	08/06/24	08/09/24
7	Guadalupe Garcia	08/13/24	08/14/24
8	Jamal King	08/20/24	08/25/24
9	Bruce Ferguson	09/02/24	09/06/24
10	Jamal King	09/06/24	09/06/24
11	Diana Kennedy	09/17/24	09/18/24
12	Diana Kennedy	09/25/24	09/27/24
13	Kiran Gupta	10/07/24	10/11/24
14	Kirk Caskey	10/31/24	11/01/24
15	Guadalupe Garcia	11/05/24	11/05/24
16	Jamal King	11/25/24	11/26/24

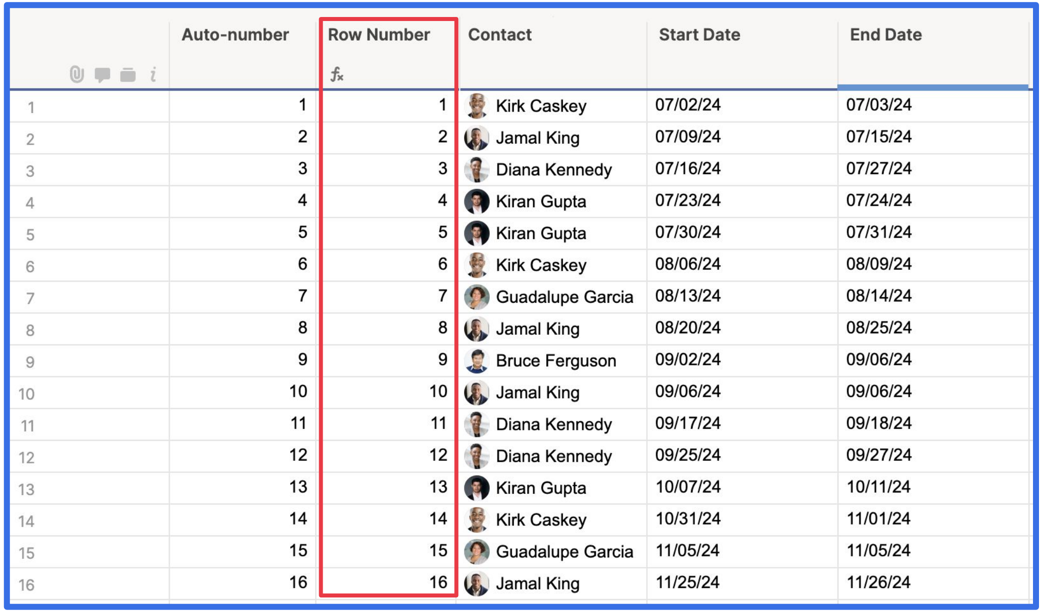
Dynamic Row IDs

Row Number

The row number feature is not available to interact with in a sheet. It’s possible to emulate the row number by using an Auto-number column and a MATCH() formula.

=MATCH([Auto-number]@row, [Auto-number]:[Auto-number], 0)

Even if the Auto-number is out of sequence, he MATCH function still works by finding the position of the unique value on its row within the unique value range.



	Auto-number	Row Number	Contact	Start Date	End Date
1	1	1	Kirk Caskey	07/02/24	07/03/24
2	2	2	Jamal King	07/09/24	07/15/24
3	3	3	Diana Kennedy	07/16/24	07/27/24
4	4	4	Kiran Gupta	07/23/24	07/24/24
5	5	5	Kiran Gupta	07/30/24	07/31/24
6	6	6	Kirk Caskey	08/06/24	08/09/24
7	7	7	Guadalupe Garcia	08/13/24	08/14/24
8	8	8	Jamal King	08/20/24	08/25/24
9	9	9	Bruce Ferguson	09/02/24	09/06/24
10	10	10	Jamal King	09/06/24	09/06/24
11	11	11	Diana Kennedy	09/17/24	09/18/24
12	12	12	Diana Kennedy	09/25/24	09/27/24
13	13	13	Kiran Gupta	10/07/24	10/11/24
14	14	14	Kirk Caskey	10/31/24	11/01/24
15	15	15	Guadalupe Garcia	11/05/24	11/05/24
16	16	16	Jamal King	11/25/24	11/26/24

Example Use Case: PTO Tracking

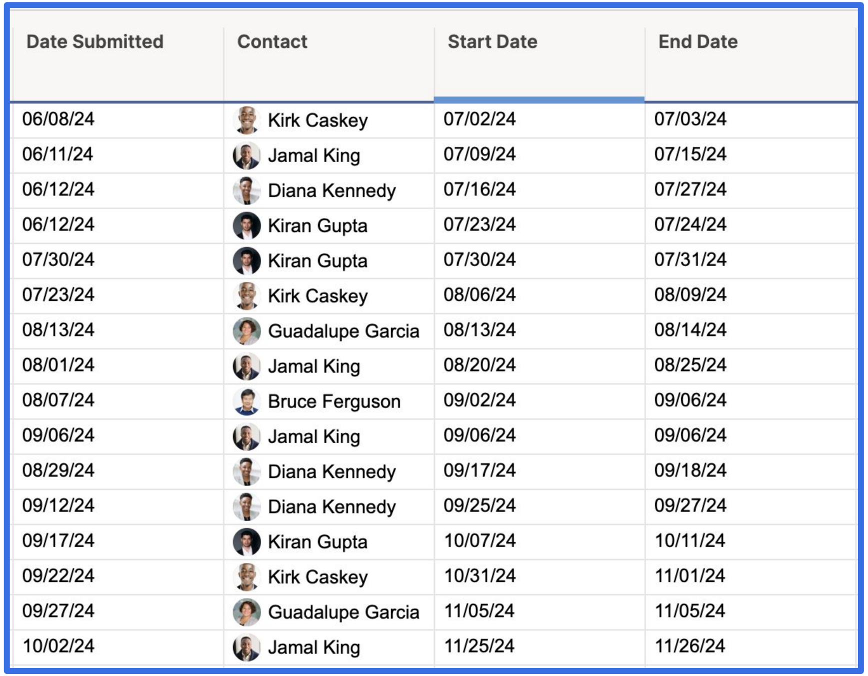
Mark is a manager of a team who tracks their work in Smartsheet. He wants to review PTO requests from his team and approve requests based on who has taken the least PTO so far in the year.

This Issue: It’s not easy to tell at a glance who has submitted the most PTO in a given year. He needs a better way to quickly know which requests to approve.

PTO Tracker Sheet

Example starting sheet

Mark’s PTO tracker sheet has a series of requests that were submitted via form. However there is no way to easily identify who has taken the least PTO at a given point in time.



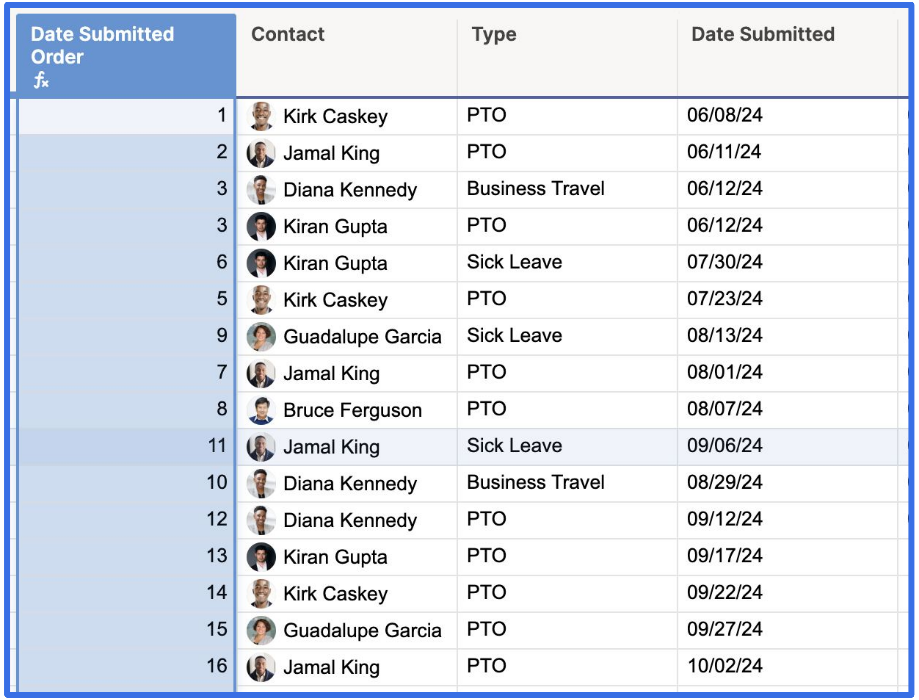
Date Submitted	Contact	Start Date	End Date
06/08/24	Kirk Caskey	07/02/24	07/03/24
06/11/24	Jamal King	07/09/24	07/15/24
06/12/24	Diana Kennedy	07/16/24	07/27/24
06/12/24	Kiran Gupta	07/23/24	07/24/24
07/30/24	Kiran Gupta	07/30/24	07/31/24
07/23/24	Kirk Caskey	08/06/24	08/09/24
08/13/24	Guadalupe Garcia	08/13/24	08/14/24
08/01/24	Jamal King	08/20/24	08/25/24
08/07/24	Bruce Ferguson	09/02/24	09/06/24
09/06/24	Jamal King	09/06/24	09/06/24
08/29/24	Diana Kennedy	09/17/24	09/18/24
09/12/24	Diana Kennedy	09/25/24	09/27/24
09/17/24	Kiran Gupta	10/07/24	10/11/24
09/22/24	Kirk Caskey	10/31/24	11/01/24
09/27/24	Guadalupe Garcia	11/05/24	11/05/24
10/02/24	Jamal King	11/25/24	11/26/24

Dynamic Row IDs

ID by Date

Another example of a dynamic row ID would be a ranking based on a date field. This could be a Created Date, Start Date, etc. In this scenario we will look at a PTO tracker sheet where employees submit requests for time off.

To create this list, we need to make use of the RANKEQ function, which will return the rank of the current row based on a range of reference values. However, the RANKEQ function does not directly reference dates - it can only reference numbers. So first, we need to convert the dates into something we can rank.



Date Submitted Order *fx*	Contact	Type	Date Submitted
1	Kirk Caskey	PTO	06/08/24
2	Jamal King	PTO	06/11/24
3	Diana Kennedy	Business Travel	06/12/24
3	Kiran Gupta	PTO	06/12/24
6	Kiran Gupta	Sick Leave	07/30/24
5	Kirk Caskey	PTO	07/23/24
9	Guadalupe Garcia	Sick Leave	08/13/24
7	Jamal King	PTO	08/01/24
8	Bruce Ferguson	PTO	08/07/24
11	Jamal King	Sick Leave	09/06/24
10	Diana Kennedy	Business Travel	08/29/24
12	Diana Kennedy	PTO	09/12/24
13	Kiran Gupta	PTO	09/17/24
14	Kirk Caskey	PTO	09/22/24
15	Guadalupe Garcia	PTO	09/27/24
16	Jamal King	PTO	10/02/24

Dynamic Row IDs

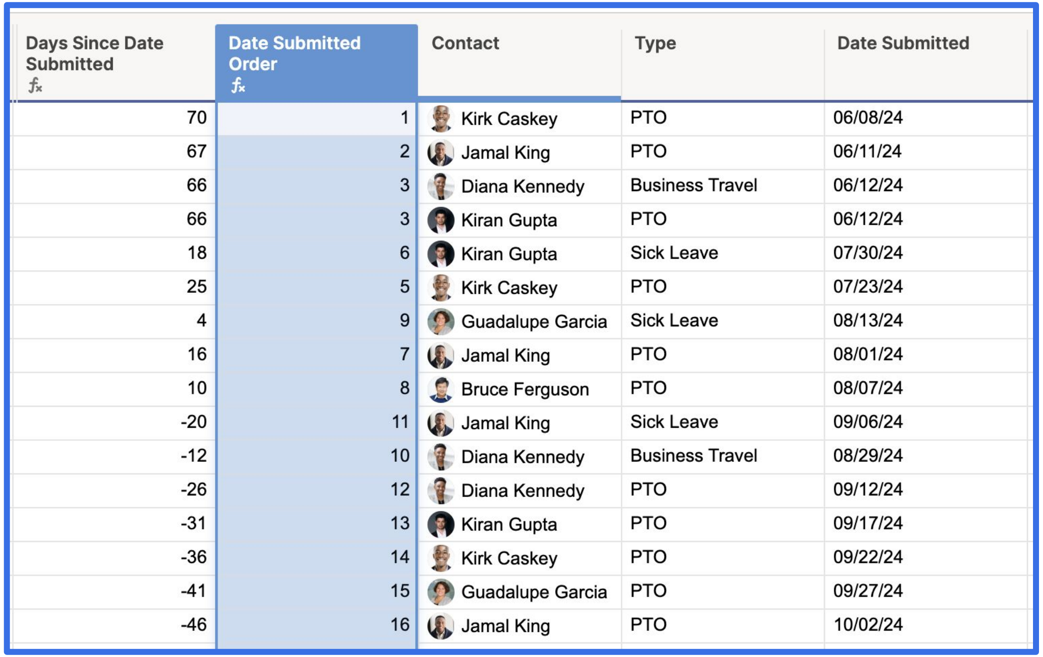
TODAY() and RANKEQ()

One way to convert dates to a number is by determining how far away they are from today. The TODAY function is perfect for this. This will be placed into a helper column.

=TODAY() - [Date Submitted]@row

This formula results in a number telling us how far the listed date is from today. Next, we can use the RANKEQ formula to rank the results in our helper column.

=RANKEQ([Days Since Date Submitted]@row, [Days Since Date Submitted]:[Days Since Date Submitted], 0)



Days Since Date Submitted	Date Submitted Order	Contact	Type	Date Submitted
70	1	Kirk Caskey	PTO	06/08/24
67	2	Jamal King	PTO	06/11/24
66	3	Diana Kennedy	Business Travel	06/12/24
66	3	Kiran Gupta	PTO	06/12/24
18	6	Kiran Gupta	Sick Leave	07/30/24
25	5	Kirk Caskey	PTO	07/23/24
4	9	Guadalupe Garcia	Sick Leave	08/13/24
16	7	Jamal King	PTO	08/01/24
10	8	Bruce Ferguson	PTO	08/07/24
-20	11	Jamal King	Sick Leave	09/06/24
-12	10	Diana Kennedy	Business Travel	08/29/24
-26	12	Diana Kennedy	PTO	09/12/24
-31	13	Kiran Gupta	PTO	09/17/24
-36	14	Kirk Caskey	PTO	09/22/24
-41	15	Guadalupe Garcia	PTO	09/27/24
-46	16	Jamal King	PTO	10/02/24

Dynamic Row IDs

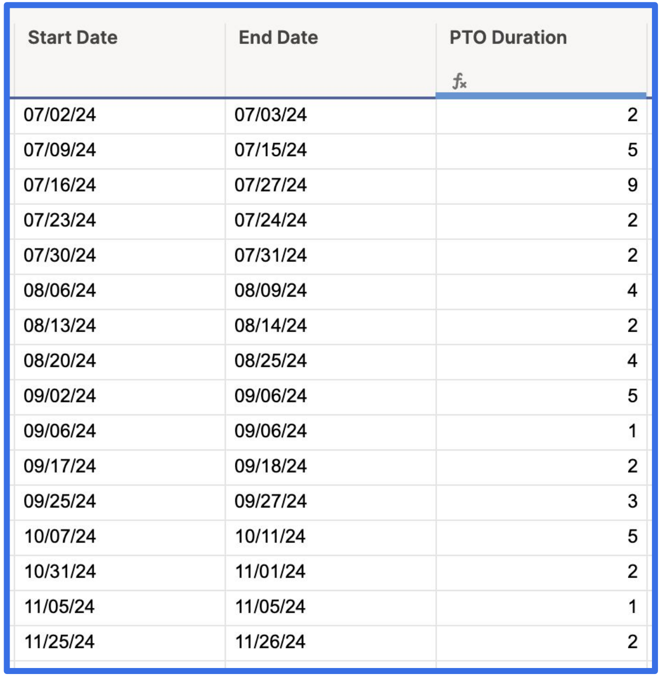
NETWORKDAY()

It’s possible that our ranking could result in some ties if multiple rows share the same submission date. We can add additional conditions that will factor into the ranking to help ensure that each rank is unique.

As an example in our PTO tracker, we could give ranking preference to submitters who have taken the least amount of time off so far.

There will be several steps to get this information. First, we need to calculate the duration of each PTO request in business days using the NETWORKDAY function.

```
=NETWORKDAY([Start Date]@row, [End Date]@row)
```



Start Date	End Date	PTO Duration
07/02/24	07/03/24	2
07/09/24	07/15/24	5
07/16/24	07/27/24	9
07/23/24	07/24/24	2
07/30/24	07/31/24	2
08/06/24	08/09/24	4
08/13/24	08/14/24	2
08/20/24	08/25/24	4
09/02/24	09/06/24	5
09/06/24	09/06/24	1
09/17/24	09/18/24	2
09/25/24	09/27/24	3
10/07/24	10/11/24	5
10/31/24	11/01/24	2
11/05/24	11/05/24	1
11/25/24	11/26/24	2

Dynamic Row IDs

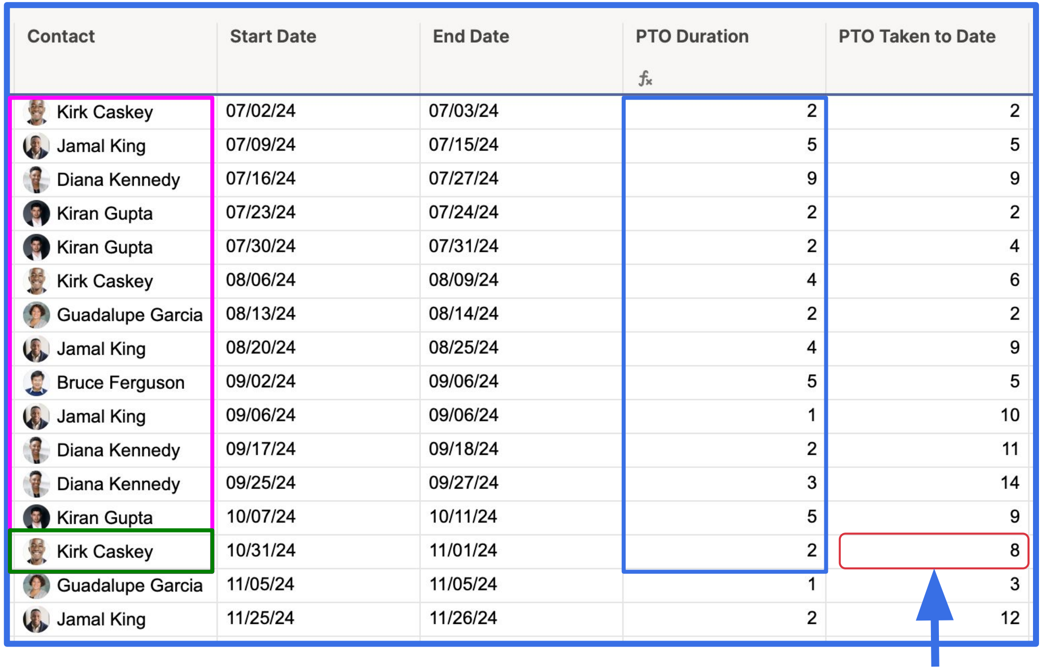
SUMIFS() and Absolute References

Next, we need to know how much time off the employee has taken up to the date of the next PTO request.

We can use the SUMIFS function to count how many total days they have taken, but there is a catch. We do not want to count future PTO requests, only past ones. This means we need to reference only from row 1 to the current row. We can do this with an absolute reference.

=SUMIFS([PTO Duration]$1:[PTO Duration]@row, Contact$1:Contact@row, Contact@row)

Note that absolute references cannot be included in a column formula.



Contact	Start Date	End Date	PTO Duration	PTO Taken to Date
Kirk Caskey	07/02/24	07/03/24	2	2
Jamal King	07/09/24	07/15/24	5	5
Diana Kennedy	07/16/24	07/27/24	9	9
Kiran Gupta	07/23/24	07/24/24	2	2
Kiran Gupta	07/30/24	07/31/24	2	4
Kirk Caskey	08/06/24	08/09/24	4	6
Guadalupe Garcia	08/13/24	08/14/24	2	2
Jamal King	08/20/24	08/25/24	4	9
Bruce Ferguson	09/02/24	09/06/24	5	5
Jamal King	09/06/24	09/06/24	1	10
Diana Kennedy	09/17/24	09/18/24	2	11
Diana Kennedy	09/25/24	09/27/24	3	14
Kiran Gupta	10/07/24	10/11/24	5	9
Kirk Caskey	10/31/24	11/01/24	2	8
Guadalupe Garcia	11/05/24	11/05/24	1	3
Jamal King	11/25/24	11/26/24	2	12

Dynamic Row IDs

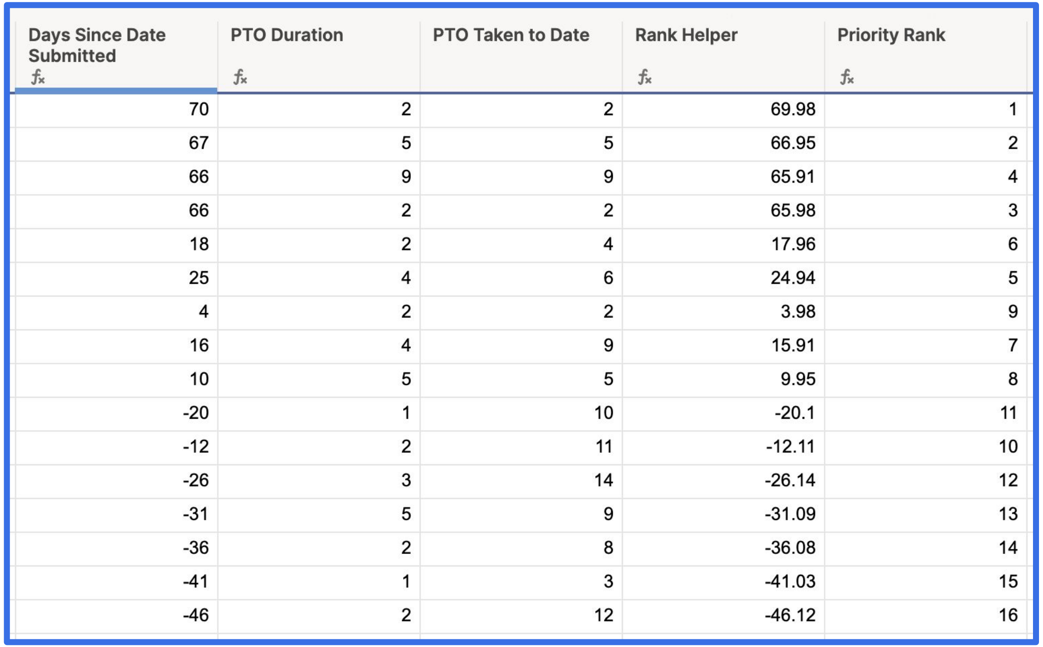
Final Ranking

Now that we have our two ranking conditions - age of the request, as well as amount of PTO taken to that point, we can combine these into one value that will give us a unique ranking.

=[Days Since Date Submitted]@row + (0 - [PTO Taken to Date]@row / 100)

This results in a list of unique values (depending on the solution, additional criteria may be required). We could use this sheet in a report and Sort by our new value output, or we could add one last formula to put these values into a final ranking.

=RANKEQ([Rank Helper]@row, [Rank Helper]:[Rank Helper])



Days Since Date Submitted	PTO Duration	PTO Taken to Date	Rank Helper	Priority Rank
70	2	2	69.98	1
67	5	5	66.95	2
66	9	9	65.91	4
66	2	2	65.98	3
18	2	4	17.96	6
25	4	6	24.94	5
4	2	2	3.98	9
16	4	9	15.91	7
10	5	5	9.95	8
-20	1	10	-20.1	11
-12	2	11	-12.11	10
-26	3	14	-26.14	12
-31	5	9	-31.09	13
-36	2	8	-36.08	14
-41	1	3	-41.03	15
-46	2	12	-46.12	16

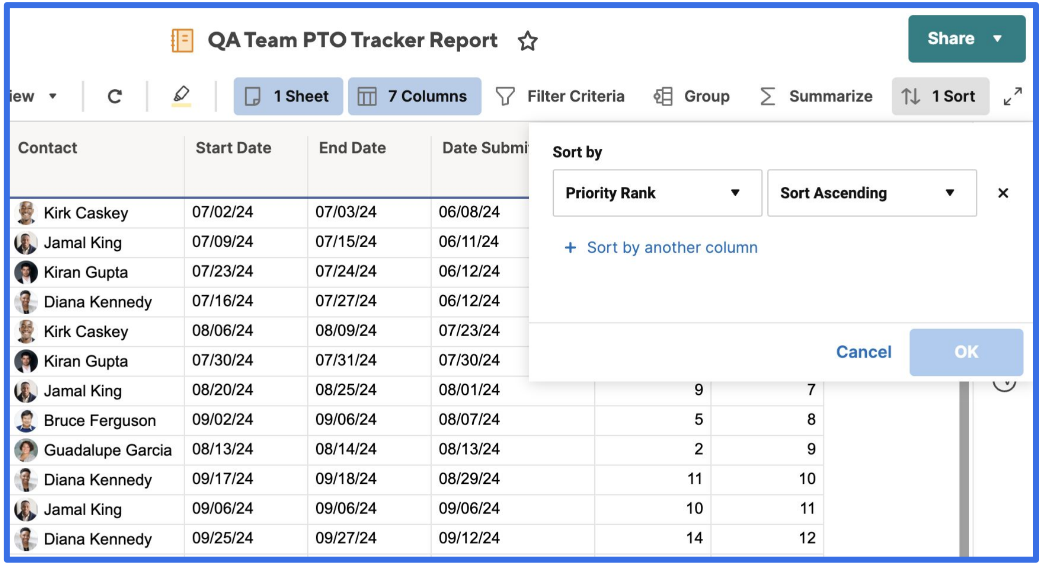
Dynamic Row IDs

Summary

This has been just one example of how data in a sheet can be used to create dynamic row IDs. There are a huge variety of formulas in Smartsheet that can help to create IDs or labels to help visualize and arrange your Smartsheet data.

These can also be used to trigger actions in Smartsheet, such as conditional formatting or automations, or used as grouping and sorting options in a report.

Remember that dynamic row IDs are not truly IDs in the traditional sense, because they are always prone to change!



QA Team PTO Tracker Report

Sort by

Priority Rank | Sort Ascending

+ Sort by another column

Contact	Start Date	End Date	Date Submi		
Kirk Caskey	07/02/24	07/03/24	06/08/24		
Jamal King	07/09/24	07/15/24	06/11/24		
Kiran Gupta	07/23/24	07/24/24	06/12/24		
Diana Kennedy	07/16/24	07/27/24	06/12/24		
Kirk Caskey	08/06/24	08/09/24	07/23/24		
Kiran Gupta	07/30/24	07/31/24	07/30/24		
Jamal King	08/20/24	08/25/24	08/01/24	9	7
Bruce Ferguson	09/02/24	09/06/24	08/07/24	5	8
Guadalupe Garcia	08/13/24	08/14/24	08/13/24	2	9
Diana Kennedy	09/17/24	09/18/24	08/29/24	11	10
Jamal King	09/06/24	09/06/24	09/06/24	10	11
Diana Kennedy	09/25/24	09/27/24	09/12/24	14	12

4

Permanent Row IDs

Permanent row IDs reference the Smartsheet row object

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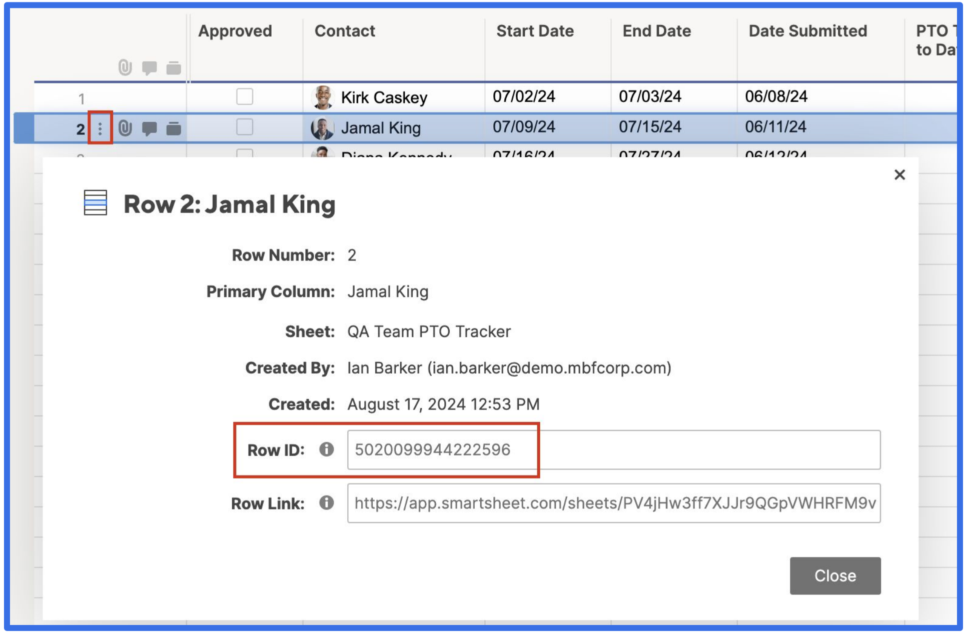
Permanent Row IDs

Row ID

Permanent row IDs represent the **Smartsheet row object** itself. If the row moves on the sheet, the ID does not change. If the row is deleted, that ID is gone forever.

The primary place you will find a permanent row ID is the Row ID in the row properties. This ID is generally not available to put into a cell, and is instead used for API based solutions. It is guaranteed to be completely unique to a specific row.



	Approved	Contact	Start Date	End Date	Date Submitted	PTO T to Da
1	□	Kirk Caskey	07/02/24	07/03/24	06/08/24	
2	□	Jamal King	07/09/24	07/15/24	06/11/24	
3	□	Diane Kennedy	07/16/24	07/27/24	06/12/24	

Row 2: Jamal King

Row Number: 2

Primary Column: Jamal King

Sheet: QA Team PTO Tracker

Created By: Ian Barker (ian.barker@demo.mbfcorp.com)

Created: August 17, 2024 12:53 PM

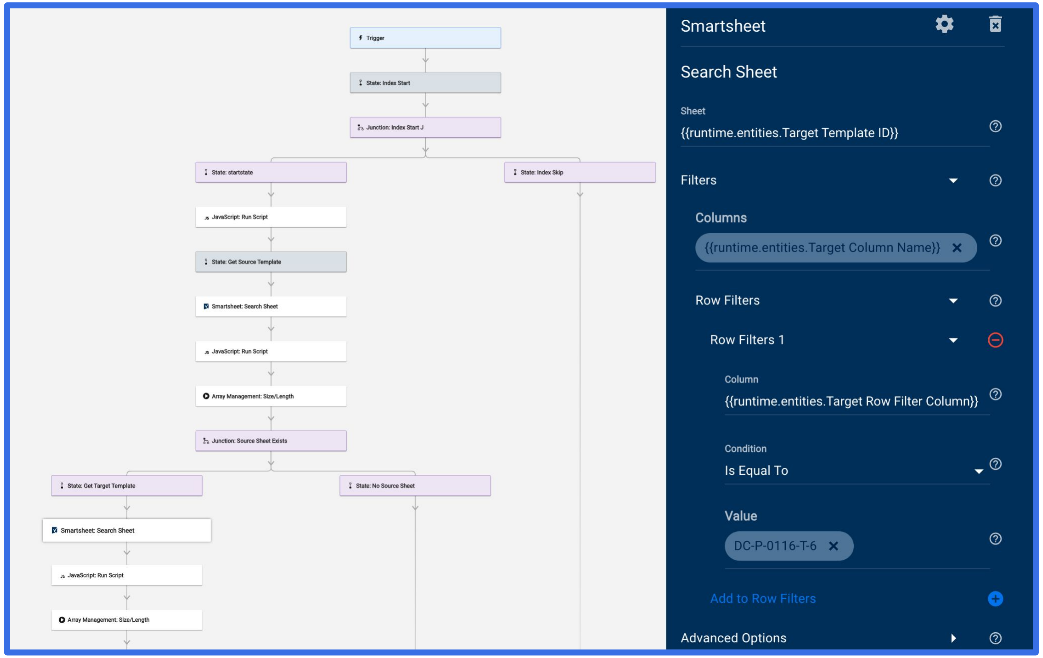
Row ID: 5020099944222596

Row Link: https://app.smartsheet.com/sheets/PV4jHw3ff7XJJr9QGpVWHRFM9v

Work with Smartsheet data in Bridge

Create highly precise custom workflows

Smartsheet Bridge enables custom workflows that expand the functionality and automations of Smartsheet. When our solution includes unique identifiers for each data point, it becomes possible to be extremely precise about triggering from or performing operations on specific data points or ranges of data points.



Smartsheet

Search Sheet

Sheet
{{runtime.entities.Target Template ID}}

Filters

Columns
{{runtime.entities.Target Column Name}}

Row Filters

Row Filters 1

Column
{{runtime.entities.Target Row Filter Column}}

Condition
Is Equal To

Value
DC-P-0116-T-6

Add to Row Filters

Advanced Options

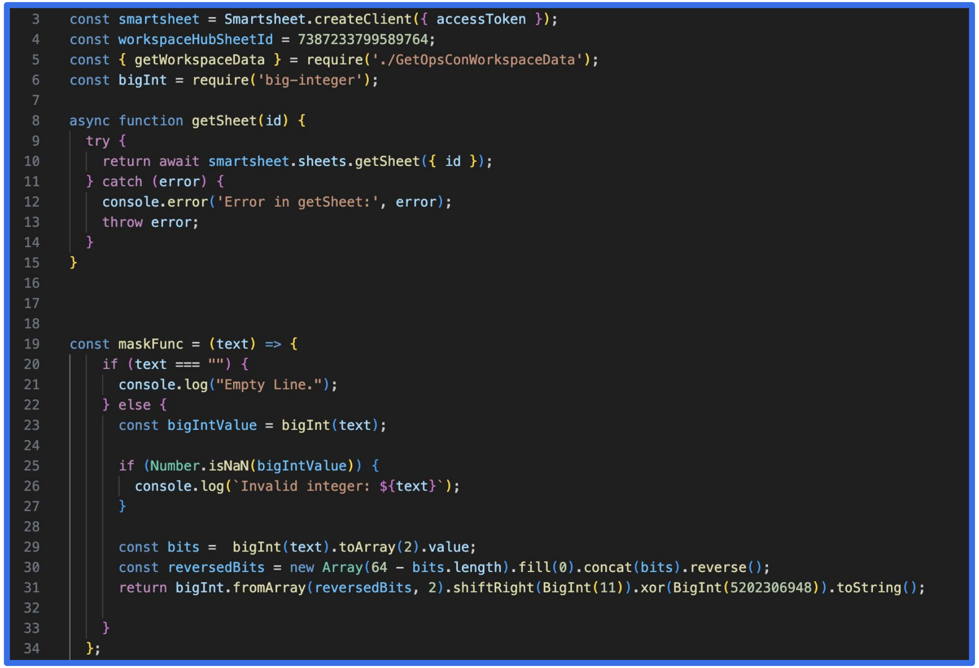
smartsheet ENGAGE

Create custom API processes

Sending and receiving tasks from other platforms is now enabled

Similar to Bridge, working with the Smartsheet API as well as custom scripts because far more manageable when the solution has unique identifiers.

Advanced automation and data engineering projects can be impossible to achieve without unique IDs depending on the task!



```javascript
const smartsheet = Smartsheet.createClient({ accessToken });
const workspaceHubSheetId = 7387233799589764;
const { getWorkspaceData } = require('./GetOpsConWorkspaceData');
const bigInt = require('big-integer');

async function getSheet(id) {
  try {
    return await smartsheet.sheets.getSheet({ id });
  } catch (error) {
    console.error('Error in getSheet:', error);
    throw error;
  }
}



const maskFunc = (text) => {
    if (text === "") {
      console.log("Empty Line.");
    } else {
      const bigIntValue = bigInt(text);

      if (Number.isNaN(bigIntValue)) {
        console.log(`Invalid integer: ${text}`);
      }

      const bits =  bigInt(text).toArray(2).value;
      const reversedBits = new Array(64 - bits.length).fill(0).concat(bits).reverse();
      return bigInt.fromArray(reversedBits, 2).shiftRight(BigInt(11)).xor(BigInt(5202306948)).toString();

    }
  };
```

5

Portfolio Row ID Management

Ensure IDs are unique across the entire solution

smartsheet
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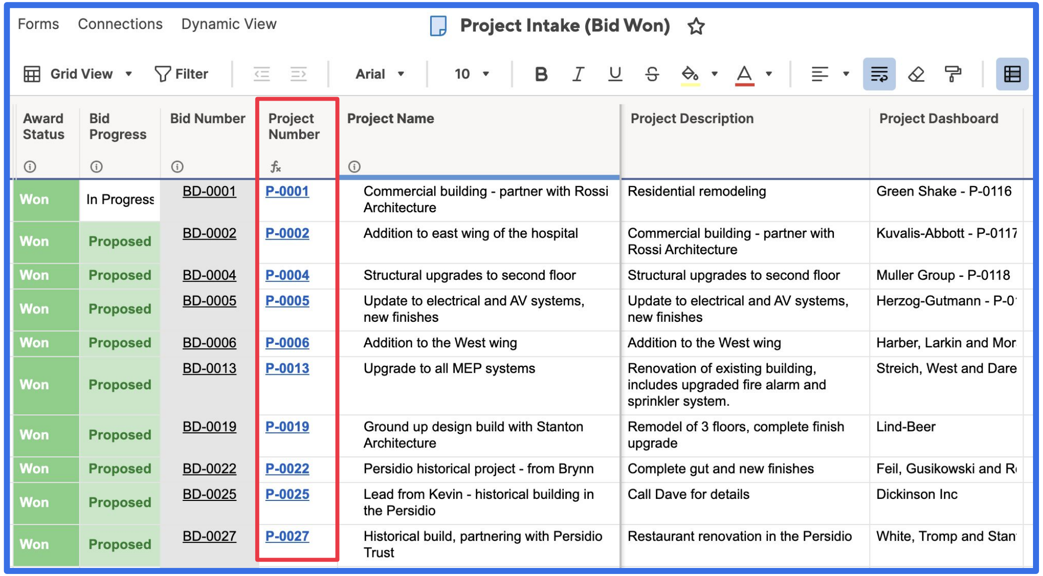
Row Ids as Project Identifiers

Appending/Prefixing text labels with project IDs

In a **Portfolio of projects**, you can use the row identifier techniques covered previously in your intake sheet to help structure your projects data and give your projects **unique IDs** for ease of reference and use in portfolio data analysis.

While project names are generally unique, it's not a guarantee - **project IDs are preferred** so that we can always be assured they're unique. In addition, ID formats are much more manageable as references.



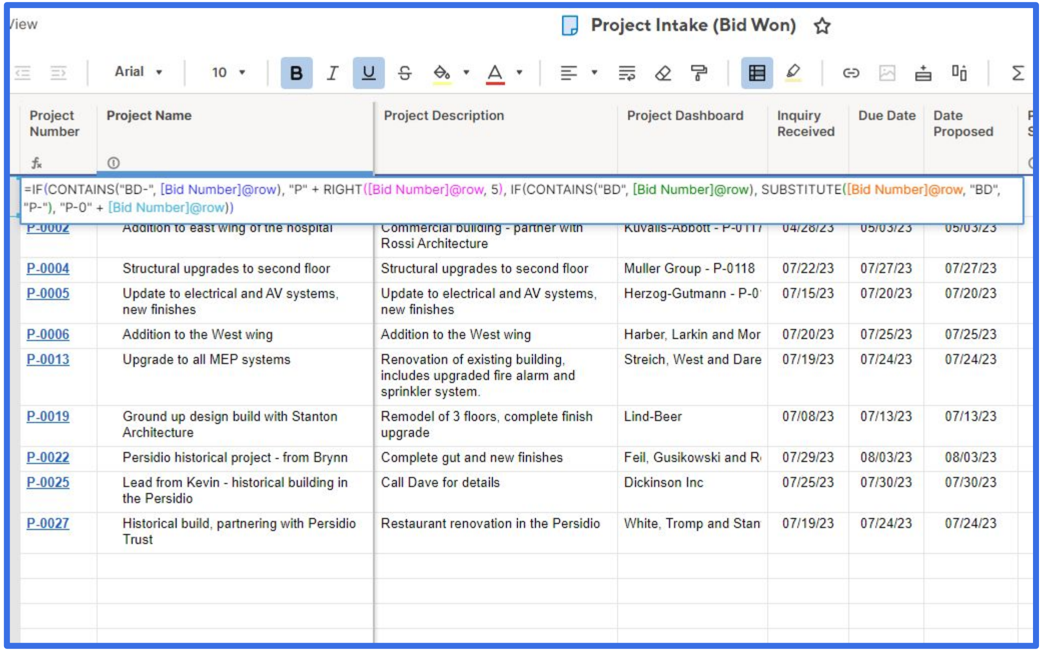
Award Status	Bid Progress	Bid Number	Project Number	Project Name	Project Description	Project Dashboard
Won	In Progress	BD-0001	P-0001	Commercial building - partner with Rossi Architecture	Residential remodeling	Green Shake - P-0116
Won	Proposed	BD-0002	P-0002	Addition to east wing of the hospital	Commercial building - partner with Rossi Architecture	Kuvalis-Abbott - P-0117
Won	Proposed	BD-0004	P-0004	Structural upgrades to second floor	Structural upgrades to second floor	Muller Group - P-0118
Won	Proposed	BD-0005	P-0005	Update to electrical and AV systems, new finishes	Update to electrical and AV systems, new finishes	Herzog-Gutmann - P-0
Won	Proposed	BD-0006	P-0006	Addition to the West wing	Addition to the West wing	Harber, Larkin and Mor
Won	Proposed	BD-0013	P-0013	Upgrade to all MEP systems	Renovation of existing building, includes upgraded fire alarm and sprinkler system.	Streich, West and Dare
Won	Proposed	BD-0019	P-0019	Ground up design build with Stanton Architecture	Remodel of 3 floors, complete finish upgrade	Lind-Beer
Won	Proposed	BD-0022	P-0022	Persidio historical project - from Brynn	Complete gut and new finishes	Feil, Gusikowski and R
Won	Proposed	BD-0025	P-0025	Lead from Kevin - historical building in the Persidio	Call Dave for details	Dickinson Inc
Won	Proposed	BD-0027	P-0027	Historical build, partnering with Persidio Trust	Restaurant renovation in the Persidio	White, Tromp and Stan

Row Ids as Project Identifiers

Appending/Prefixing text labels with project IDs

Below is an example formula that can be used to add an ID that is unique to both the task and the project.

=IF(CONTAINS("BD-", [Bid Number]@row), "P" + RIGHT([Bid Number]@row, 5), IF(CONTAINS("BD", [Bid Number]@row), SUBSTITUTE([Bid Number]@row, "BD", "P-"), "P-0" + [Bid Number]@row))



=IF(CONTAINS("BD-", [Bid Number]@row), "P" + RIGHT([Bid Number]@row, 5), IF(CONTAINS("BD", [Bid Number]@row), SUBSTITUTE([Bid Number]@row, "BD", "P-"), "P-0" + [Bid Number]@row))

Project Number	Project Name	Project Description	Project Dashboard	Inquiry Received	Due Date	Date Proposed
P-0002	Addition to east wing of the hospital	Commercial building - partner with Rossi Architecture	Kuvalis-Abbott - P-0117	04/28/23	05/03/23	05/03/23
P-0004	Structural upgrades to second floor	Structural upgrades to second floor	Muller Group - P-0118	07/22/23	07/27/23	07/27/23
P-0005	Update to electrical and AV systems, new finishes	Update to electrical and AV systems, new finishes	Herzog-Gutmann - P-0	07/15/23	07/20/23	07/20/23
P-0006	Addition to the West wing	Addition to the West wing	Harber, Larkin and Mor	07/20/23	07/25/23	07/25/23
P-0013	Upgrade to all MEP systems	Renovation of existing building, includes upgraded fire alarm and sprinkler system.	Streich, West and Dare	07/19/23	07/24/23	07/24/23
P-0019	Ground up design build with Stanton Architecture	Remodel of 3 floors, complete finish upgrade	Lind-Beer	07/08/23	07/13/23	07/13/23
P-0022	Persidio historical project - from Brynn	Complete gut and new finishes	Feil, Gusikowski and R	07/29/23	08/03/23	08/03/23
P-0025	Lead from Kevin - historical building in the Persidio	Call Dave for details	Dickinson Inc	07/25/23	07/30/23	07/30/23
P-0027	Historical build, partnering with Persidio Trust	Restaurant renovation in the Persidio	White, Tromp and Stan	07/19/23	07/24/23	07/24/23

Example Use Case: Portfolio Level Reporting

David manages a solution used to manage a variety of construction projects.

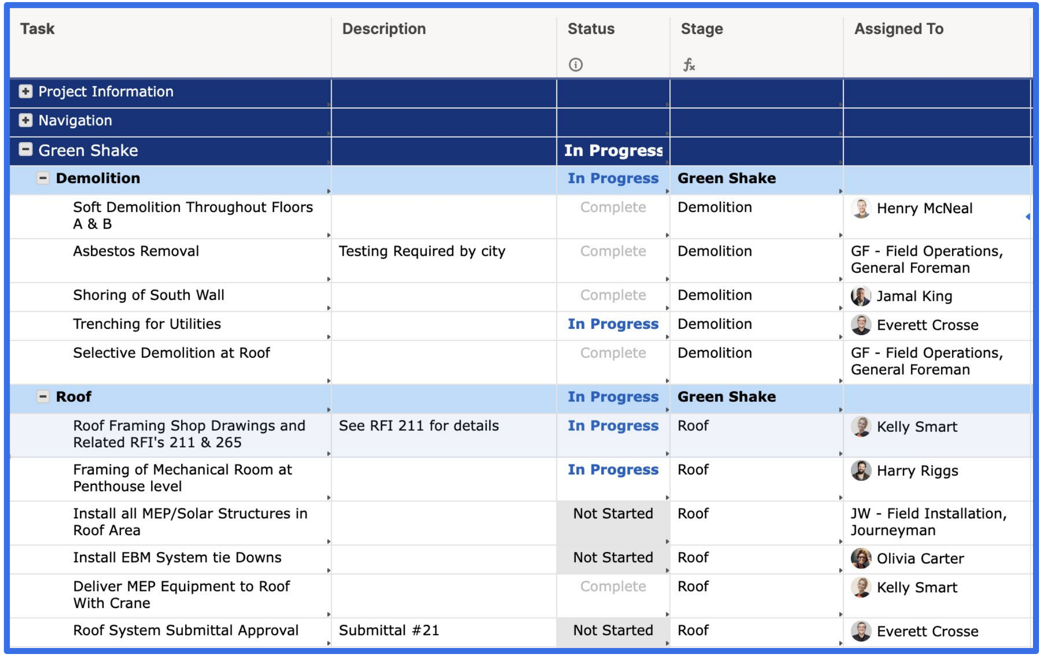
He would like to create metrics using formulas that reference tasks across his entire organization.

The Issue: Since each of these tasks exists on different sheets, it's not possible to reference each of them with formulas. Even if they were combined, there are so many similar tasks between projects, it would be difficult to tell them apart.

Portfolio level task reporting

Gather all rows with a Dynamic Scope Report

David's solution includes a large number of construction projects, each of which has a series of tasks with various, statuses, types, assignees, and more.



Task	Description	Status	Stage	Assigned To
⊞ Project Information				
⊞ Navigation				
⊟ Green Shake		**In Progress**		
⊟ **Demolition**		**In Progress**	**Green Shake**	
Soft Demolition Throughout Floors A & B		Complete	Demolition	Henry McNeal
Asbestos Removal	Testing Required by city	Complete	Demolition	GF - Field Operations, General Foreman
Shoring of South Wall		Complete	Demolition	Jamal King
Trenching for Utilities		**In Progress**	Demolition	Everett Crosse
Selective Demolition at Roof		Complete	Demolition	GF - Field Operations, General Foreman
⊟ **Roof**		**In Progress**	**Green Shake**	
Roof Framing Shop Drawings and Related RFI's 211 & 265	See RFI 211 for details	**In Progress**	Roof	Kelly Smart
Framing of Mechanical Room at Penthouse level		**In Progress**	Roof	Harry Riggs
Install all MEP/Solar Structures in Roof Area		Not Started	Roof	JW - Field Installation, Journeyman
Install EBM System tie Downs		Not Started	Roof	Olivia Carter
Deliver MEP Equipment to Roof With Crane		Complete	Roof	Kelly Smart
Roof System Submittal Approval	Submittal #21	Not Started	Roof	Everett Crosse

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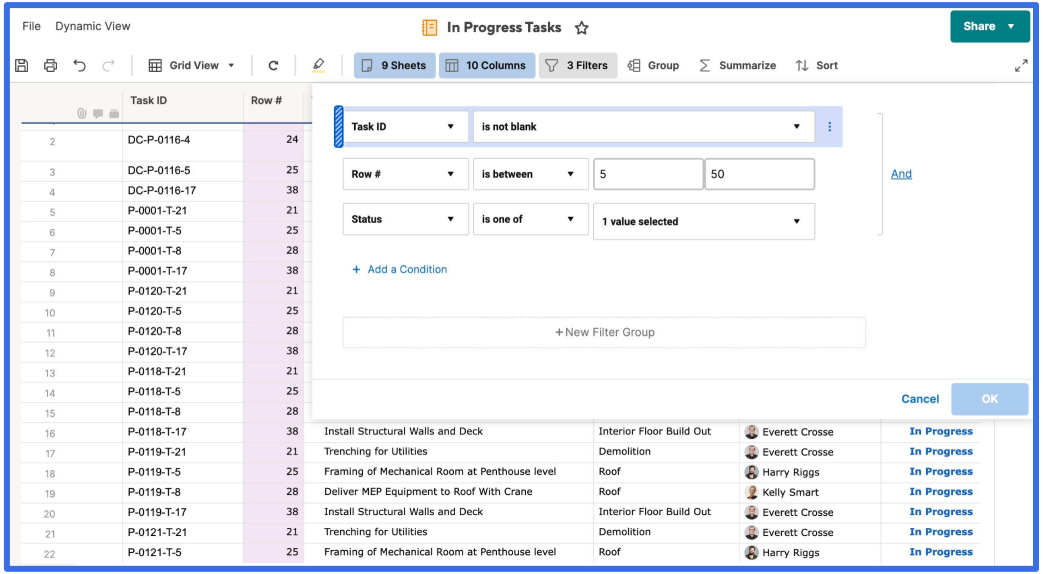
Portfolio level task reporting

Gather all rows with a Dynamic Scope Report

With a **Dynamic Scope Report or a Workspace Report**, it's possible to bring all relevant rows from a portfolio of projects into a single report.



Task ID	is not blank	
Row #	is between	5 / 50
Status	is one of	1 value selected

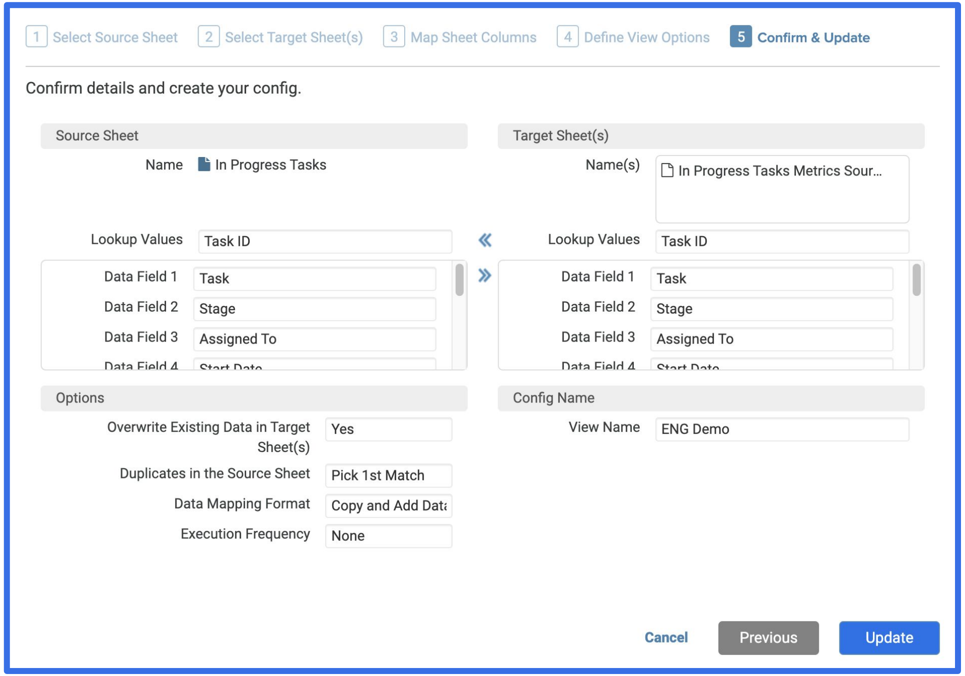
	Task ID	Row #				
2	DC-P-0116-4	24				
3	DC-P-0116-5	25				
4	DC-P-0116-17	38				
5	P-0001-T-21	21				
6	P-0001-T-5	25				
7	P-0001-T-8	28				
8	P-0001-T-17	38				
9	P-0120-T-21	21				
10	P-0120-T-5	25				
11	P-0120-T-8	28				
12	P-0120-T-17	38				
13	P-0118-T-21	21				
14	P-0118-T-5	25				
15	P-0118-T-8	28				
16	P-0118-T-17	38	Install Structural Walls and Deck	Interior Floor Build Out	Everett Crosse	In Progress
17	P-0119-T-21	21	Trenching for Utilities	Demolition	Everett Crosse	In Progress
18	P-0119-T-5	25	Framing of Mechanical Room at Penthouse level	Roof	Harry Riggs	In Progress
19	P-0119-T-8	28	Deliver MEP Equipment to Roof With Crane	Roof	Kelly Smart	In Progress
20	P-0119-T-17	38	Install Structural Walls and Deck	Interior Floor Build Out	Everett Crosse	In Progress
21	P-0121-T-21	21	Trenching for Utilities	Demolition	Everett Crosse	In Progress
22	P-0121-T-5	25	Framing of Mechanical Room at Penthouse level	Roof	Harry Riggs	In Progress

DataMesh

Task ID enables Lookup Value

To build **portfolio level metrics,** simply relying on the report won’t suffice since reports don’t support formulas. Thankfully, **DataMesh can send rows from a report to a sheet**.

The only way DataMesh can know which rows to sync to the sheet are by referencing a **unique lookup value**. Without unique IDs however, it is not possible to sync the report to a sheet, since DataMesh doesn’t know which rows between the source and target are associated.



Confirm details and create your config.

Source Sheet

Name: In Progress Tasks

Lookup Values: Task ID

Data Field 1: Task
Data Field 2: Stage
Data Field 3: Assigned To
Data Field 4: Start Date

Target Sheet(s)

Name(s): In Progress Tasks Metrics Sour...

Lookup Values: Task ID

Data Field 1: Task
Data Field 2: Stage
Data Field 3: Assigned To
Data Field 4: Start Date

Options

Overwrite Existing Data in Target Sheet(s): Yes
Duplicates in the Source Sheet: Pick 1st Match
Data Mapping Format: Copy and Add Dat:
Execution Frequency: None

Config Name

View Name: ENG Demo

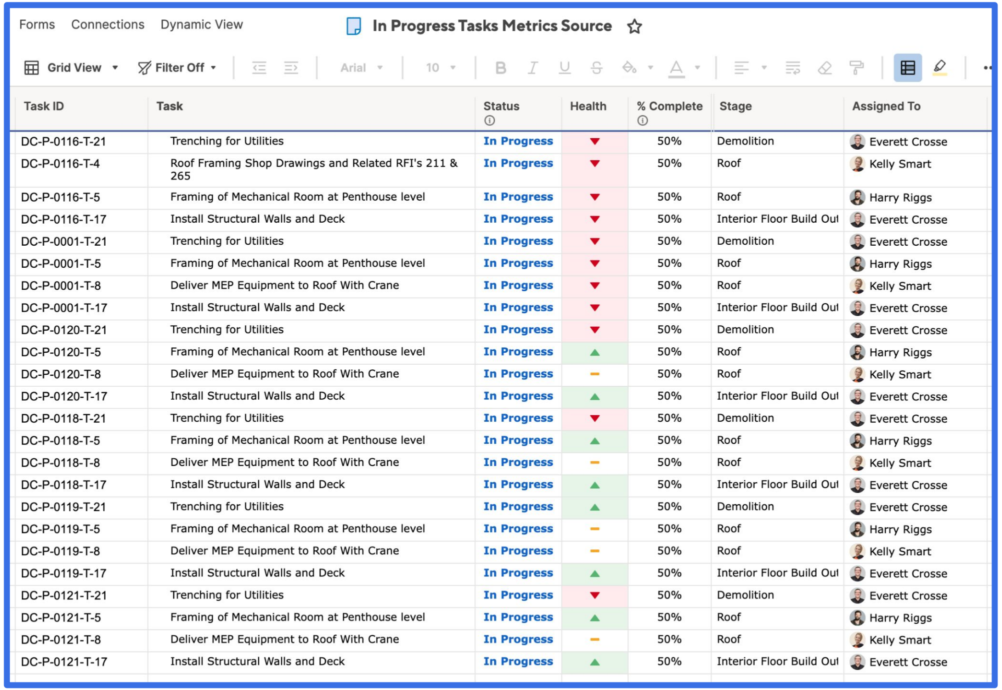
Portfolio level task metrics source

Reference data from the entire portfolio

After running the **DataMesh,** each of the requested tasks is now available in a single sheet. DataMesh will keep the sheet **continuously updated from the entire portfolio**, and this sheet will serve as a reference for formulas that help gather portfolio level metrics from task rows.

This would not have been possible without unique identifiers labeling the task rows!

This is just one example case where unique IDs enable new functionality in Smartsheet, and **make life as data administrators much easier**. Many more benefits will apply immediately and emerge as solutions continue to scale up.



Task ID	Task	Status	Health	% Complete	Stage	Assigned To
DC-P-0116-T-21	Trenching for Utilities	In Progress	▼	50%	Demolition	Everett Crosse
DC-P-0116-T-4	Roof Framing Shop Drawings and Related RFI's 211 & 265	In Progress	▼	50%	Roof	Kelly Smart
DC-P-0116-T-5	Framing of Mechanical Room at Penthouse level	In Progress	▼	50%	Roof	Harry Riggs
DC-P-0116-T-17	Install Structural Walls and Deck	In Progress	▼	50%	Interior Floor Build Out	Everett Crosse
DC-P-0001-T-21	Trenching for Utilities	In Progress	▼	50%	Demolition	Everett Crosse
DC-P-0001-T-5	Framing of Mechanical Room at Penthouse level	In Progress	▼	50%	Roof	Harry Riggs
DC-P-0001-T-8	Deliver MEP Equipment to Roof With Crane	In Progress	▼	50%	Roof	Kelly Smart
DC-P-0001-T-17	Install Structural Walls and Deck	In Progress	▼	50%	Interior Floor Build Out	Everett Crosse
DC-P-0120-T-21	Trenching for Utilities	In Progress	▼	50%	Demolition	Everett Crosse
DC-P-0120-T-5	Framing of Mechanical Room at Penthouse level	In Progress	▲	50%	Roof	Harry Riggs
DC-P-0120-T-8	Deliver MEP Equipment to Roof With Crane	In Progress	—	50%	Roof	Kelly Smart
DC-P-0120-T-17	Install Structural Walls and Deck	In Progress	▲	50%	Interior Floor Build Out	Everett Crosse
DC-P-0118-T-21	Trenching for Utilities	In Progress	▼	50%	Demolition	Everett Crosse
DC-P-0118-T-5	Framing of Mechanical Room at Penthouse level	In Progress	▲	50%	Roof	Harry Riggs
DC-P-0118-T-8	Deliver MEP Equipment to Roof With Crane	In Progress	—	50%	Roof	Kelly Smart
DC-P-0118-T-17	Install Structural Walls and Deck	In Progress	▲	50%	Interior Floor Build Out	Everett Crosse
DC-P-0119-T-21	Trenching for Utilities	In Progress	▲	50%	Demolition	Everett Crosse
DC-P-0119-T-5	Framing of Mechanical Room at Penthouse level	In Progress	—	50%	Roof	Harry Riggs
DC-P-0119-T-8	Deliver MEP Equipment to Roof With Crane	In Progress	—	50%	Roof	Kelly Smart
DC-P-0119-T-17	Install Structural Walls and Deck	In Progress	▲	50%	Interior Floor Build Out	Everett Crosse
DC-P-0121-T-21	Trenching for Utilities	In Progress	▼	50%	Demolition	Everett Crosse
DC-P-0121-T-5	Framing of Mechanical Room at Penthouse level	In Progress	▲	50%	Roof	Harry Riggs
DC-P-0121-T-8	Deliver MEP Equipment to Roof With Crane	In Progress	—	50%	Roof	Kelly Smart
DC-P-0121-T-17	Install Structural Walls and Deck	In Progress	▲	50%	Interior Floor Build Out	Everett Crosse

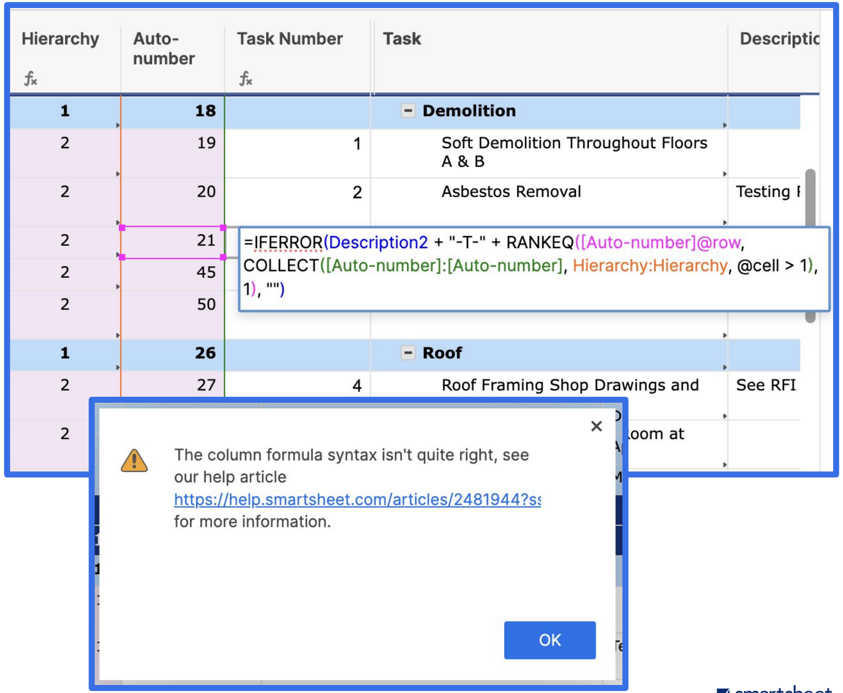
Global Task IDs

Column formulas with cell references

Once we have a Project ID configured in our intake sheet, we can use that ID on individual project level sheets to ensure that all of our project content has completely unique identifiers. Once again, we'll use formula to implement this ID, however this time there is a new challenge.

=IFERROR(Description2 + "-T-" + RANKEQ([Auto-number]@row, COLLECT([Auto-number]:[Auto-number], Hierarchy:Hierarchy, @cell > 1), 1), "")

This will result in an error, because references to specific cells are not allowed in column formulas.



Hierarchy	Auto-number	Task Number	Task	Descriptic
1	18		Demolition	
2	19	1	Soft Demolition Throughout Floors A & B	
2	20	2	Asbestos Removal	Testing f
2	21			
2	45			
2	50			
1	26		Roof	
2	27	4	Roof Framing Shop Drawings and	See RFI
2			oom at	

=IFERROR(Description2 + "-T-" + RANKEQ([Auto-number]@row, COLLECT([Auto-number]:[Auto-number], Hierarchy:Hierarchy, @cell > 1), 1), "")

The column formula syntax isn't quite right, see our help article https://help.smartsheet.com/articles/2481944?s for more information.

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Global Task IDs

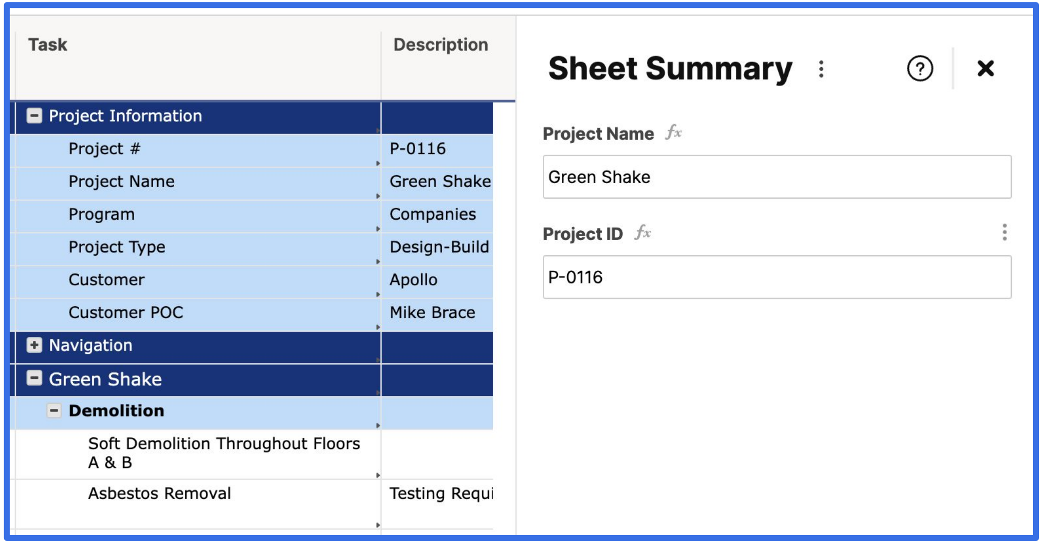
Leverage Sheet Summary Field

To resolve this issue, we can make use of the Sheet Summary feature. The Sheet Summary can reference the Project ID in the sheet:

=Description2

Then our previously formula can directly reference the Sheet Summary field using a hashtag reference.

```
=IFERROR([Project ID]# + "-T-" +
RANKEQ([Auto-number]@row,
COLLECT([Auto-number]:[Auto-number], Hierarchy:Hierarchy,
@cell > 1), 1), "")
```



Task	Description
Project Information	
Project #	P-0116
Project Name	Green Shake
Program	Companies
Project Type	Design-Build
Customer	Apollo
Customer POC	Mike Brace
Navigation	
Green Shake	
Demolition	
Soft Demolition Throughout Floors A & B	
Asbestos Removal	Testing Requi

Sheet Summary

Project Name: Green Shake

Project ID: P-0116

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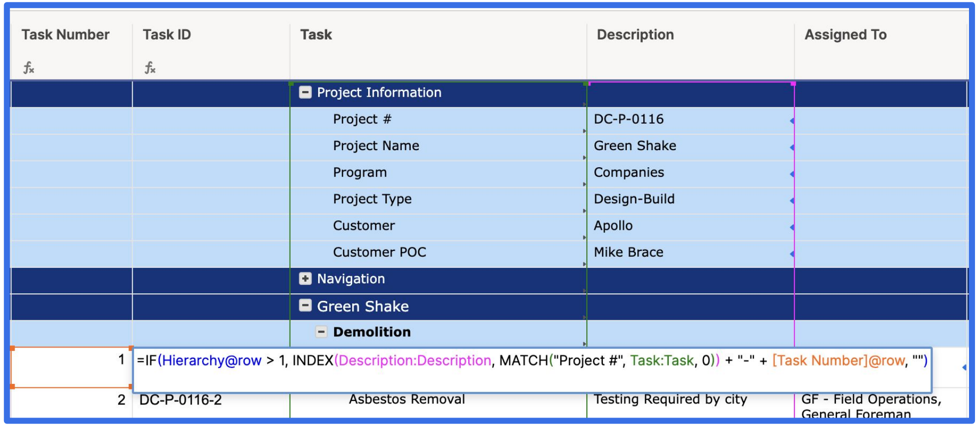
Global Task IDs

INDEX MATCH

In some cases, we don’t even need the Sheet Summary thanks to the power of INDEX MATCH!

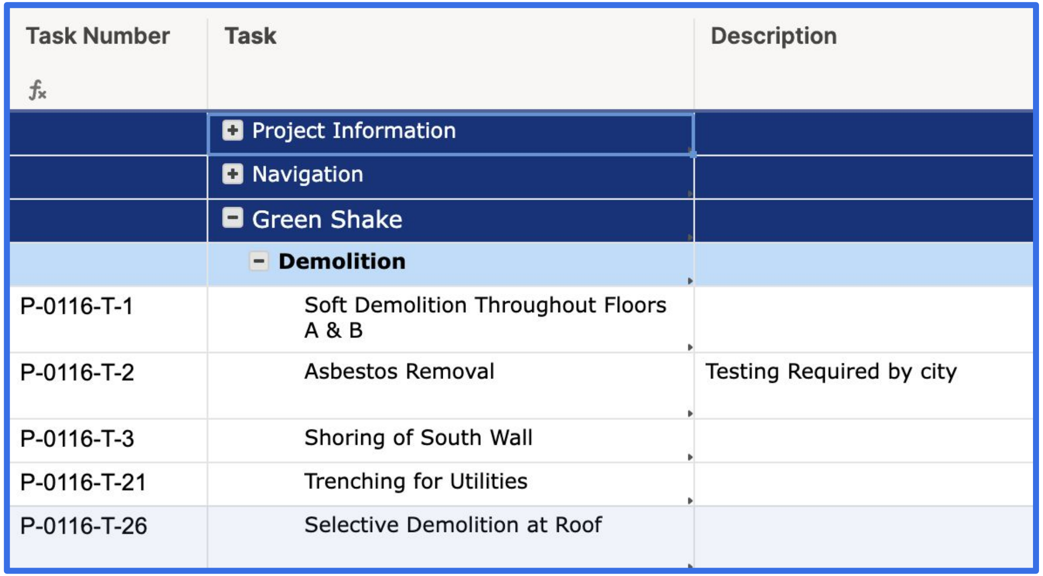
```
=IF(Hierarchy@row > 1, INDEX(Description:Description, MATCH("Project #", Task:Task, 0)) + "-" + [Task Number]@row, "")
```



Task Number	Task ID	Task	Description	Assigned To
		Project Information		
		Project #	DC-P-0116	
		Project Name	Green Shake	
		Program	Companies	
		Project Type	Design-Build	
		Customer	Apollo	
		Customer POC	Mike Brace	
		Navigation		
		Green Shake		
		Demolition		
1	=IF(Hierarchy@row > 1, INDEX(Description:Description, MATCH("Project #", Task:Task, 0)) + "-" + [Task Number]@row, "")			
2	DC-P-0116-2	Asbestos Removal	Testing Required by city	GF - Field Operations, General Foreman

Global Task IDs

Now every task row has an ID that completely unique. No task row will share an ID with any other row in your Smartsheet solution.



Task Number 𝑓ₓ	Task	Description
	⊞ Project Information	
	⊞ Navigation	
	⊟ Green Shake	
	⊟ **Demolition**	
P-0116-T-1	Soft Demolition Throughout Floors A & B	
P-0116-T-2	Asbestos Removal	Testing Required by city
P-0116-T-3	Shoring of South Wall	
P-0116-T-21	Trenching for Utilities	
P-0116-T-26	Selective Demolition at Roof	

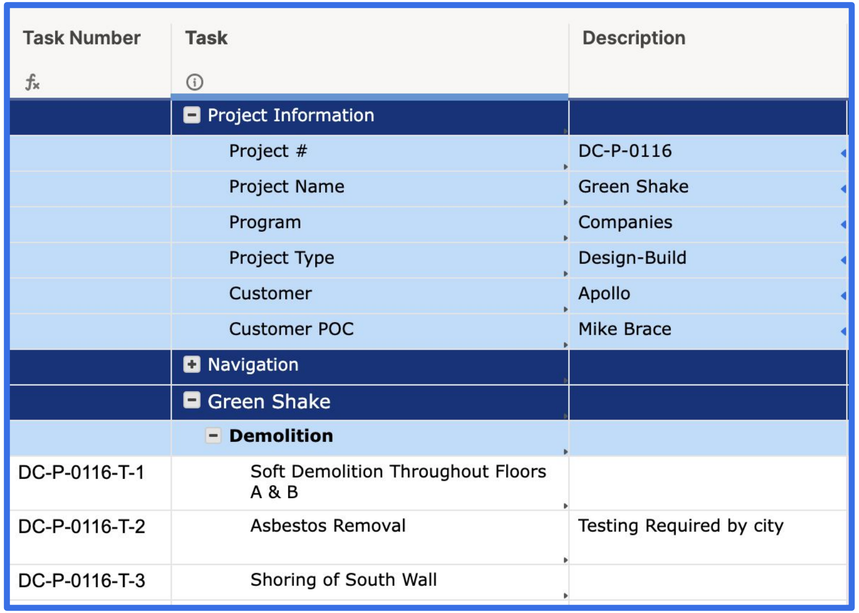
Global Task IDs

Unique task IDs with multiple task solutions

Even the previous solution may not be guaranteed to be completely unique. What is there are multiple Smartsheet solutions operating independently, and each one uses auto-number to identify projects? There will be multiple projects in separate solutions each with the same number.

For this reason it can be good to have a solution ID in addition to a project ID that can also be appended to the the ID. This offers further assurance that each datapoint is assigned and a completely unique ID.

Note that if your projects are created by a Salesforce or JIRA Connector, this is likely unnecessary since those systems will provide unique IDs already.



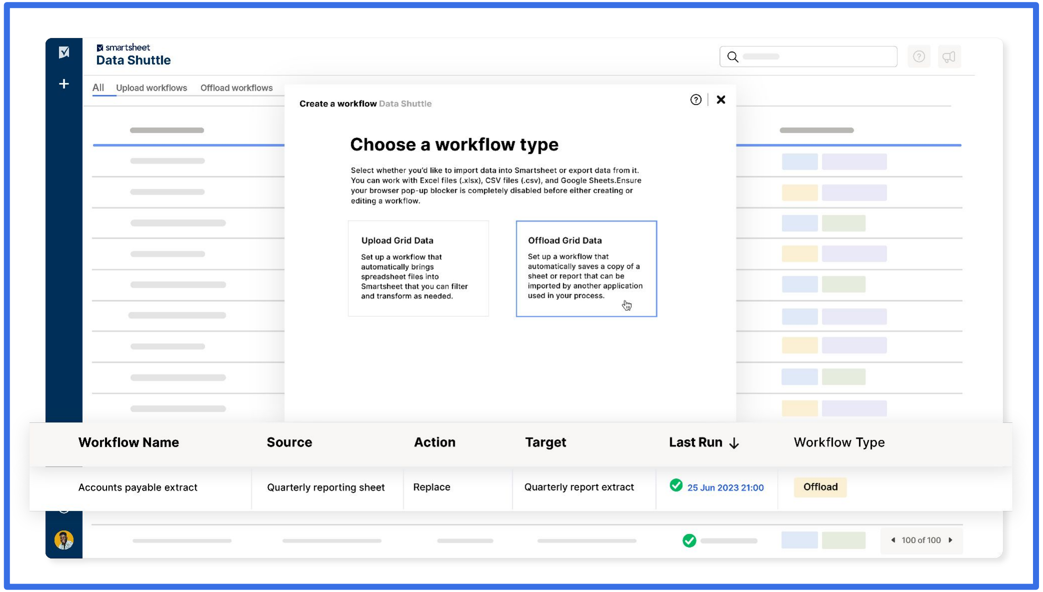
Task Number *fx*	Task ⓘ	Description
	⊟ Project Information	
	Project #	DC-P-0116
	Project Name	Green Shake
	Program	Companies
	Project Type	Design-Build
	Customer	Apollo
	Customer POC	Mike Brace
	⊞ Navigation	
	⊟ Green Shake	
	⊟ **Demolition**	
DC-P-0116-T-1	Soft Demolition Throughout Floors A & B	
DC-P-0116-T-2	Asbestos Removal	Testing Required by city
DC-P-0116-T-3	Shoring of South Wall	

Consistency with external systems

Sending and receiving tasks from other platforms is now enabled

With unique IDs for every data point in place, you can send Smartsheet data to external systems such as Sharepoint or PeopleSoft with DataShuttle.

With unique IDs in place, it is no problem to share data with other systems and then ingest them back into Smartsheet, knowing precisely what that data represents and where it needs to go in Smartsheet.



Create a workflow Data Shuttle

Choose a workflow type

Select whether you'd like to import data into Smartsheet or export data from it. You can work with Excel files (.xlsx), CSV files (.csv), and Google Sheets.Ensure your browser pop-up blocker is completely disabled before either creating or editing a workflow.

Upload Grid Data
Set up a workflow that automatically brings spreadsheet files into Smartsheet that you can filter and transform as needed.

Offload Grid Data
Set up a workflow that automatically saves a copy of a sheet or report that can be imported by another application used in your process.

Workflow Name	Source	Action	Target	Last Run ↓	Workflow Type
Accounts payable extract	Quarterly reporting sheet	Replace	Quarterly report extract	✓ 25 Jun 2023 21:00	Offload

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Retrofitting unique IDs

Add unique IDs to a solution that is already in flight

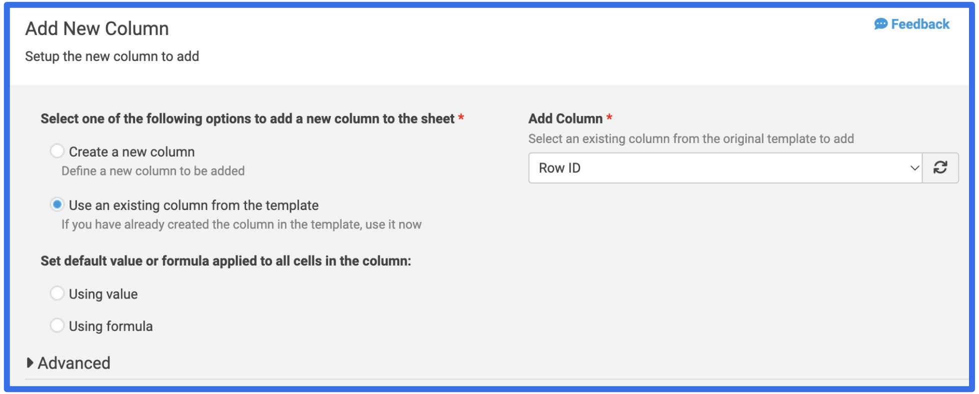
Methods for adding IDs to existing projects

Control Center Global Updates

If you have a Smartsheet solution that already has many in flight projects, adding unique IDs to rows on each of those sheets may seem daunting. However if you created these projects with Control Center, adding in column formulas to old sheets is easy with Global Updates.

Simply add a new column with the column formula to the template project sheets, and then in Control Center create a new "Add New Column" Global Update that utilizes the new template column. Run the update, and the new column will be applied to all active projects!

Note that this will not be compatible with the Sheet Summary workaround referenced earlier, and will also not update archived projects.



Add New Column

Setup the new column to add

Feedback

Select one of the following options to add a new column to the sheet *

○ Create a new column
Define a new column to be added

● Use an existing column from the template
If you have already created the column in the template, use it now

Set default value or formula applied to all cells in the column:

○ Using value

○ Using formula

▸ Advanced

Add Column *

Select an existing column from the original template to add

Row ID

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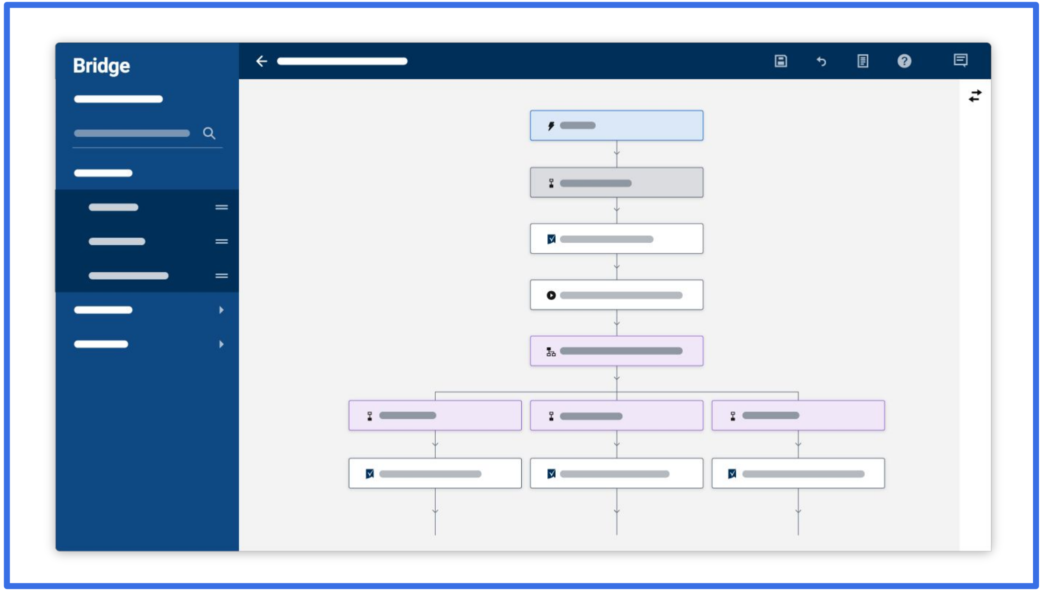
Methods for adding IDs to existing projects

Bridge workflows

Alternatively, Smartsheet Bridge can be utilized to retrofit projects with row management systems. Although more complex to configure than global updates, Bridge also offers greater flexibility, including the ability to update Sheet Summaries and archived projects!

For more information please visit the Bridge and Automations booth.



7

Conclusion

Summarizing the importance of row management

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In summary

In this presentation we discussed…

- What row ID management is and why it is beneficial to wide variety of Smartsheet solutions.
    - What is it? - A “skeleton” on which to build your solution that gives it mobility and organized flexibility
    - Why is it important? - It makes many things easier, and bolsters data integrity
    - When is it useful? - Almost always!

- Various types of row ID management, and deeper dives the formulas and functionality that make them work.
    - Permanent Row IDs - Autonumber, System row Ids (Smartsheet row-centric)
    - Dynamic Row IDs - Informational about state (think indices, in database terms)
    - Permanent Record IDs (think keys, in database terms)

- Applying row ID management fundamentals to a global solution with scaling and portfolio reporting capabilities
    - Project + Task/Row Combinations

- BONUS: Retrofitting into an existing solution - Global Updates and/or Bridge

Register for upcoming User Groups

Continue to expand your Smartsheet skills and connections by attending a User Group.

Smartsheet User Groups

- **Discover** how others are using Smartsheet
- **Network** with the Smartsheet team and your peers
- **Virtual** and **in-person** events around the globe

Next steps...

- Visit us at the Automations booth
- Identify use cases and build your own row management systems
- Leverage the Smartsheet Community for FAQs and networking

Take the survey

We'd love to hear your thoughts on the session.

Open this session in the mobile app, click "Survey," and answer two questions — it's that easy!

Thank you.

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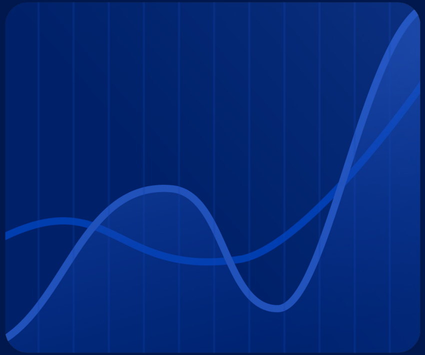
- **@smartsheet**



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