Creating Custom Visuals within Power BI

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Please install Power BI and download the workshop file if you haven't already!

12:00 – 1:20	***Lunch & Posters***
1:20 – 1:40	***An Analysis of Undeclared Artificial Intelligence and the Communication Practices of Academic Journals***, Miles Kenyon, University of Toronto
1:40 – 2:00	***The Great Convergence: Where GenAI, Expertise, Fundraising Connect***, Dieyun Song, Northwestern University
2:00 – 2:40	***Creating Custom Visuals within Power BI***, Brian Wu, University Health Network **Download Power BI and this file to follow along.

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Presentation Outline

- Research Analytics at UHN
- The Utility of PowerBI
- Introduction to Deneb
- Workshop Portion!

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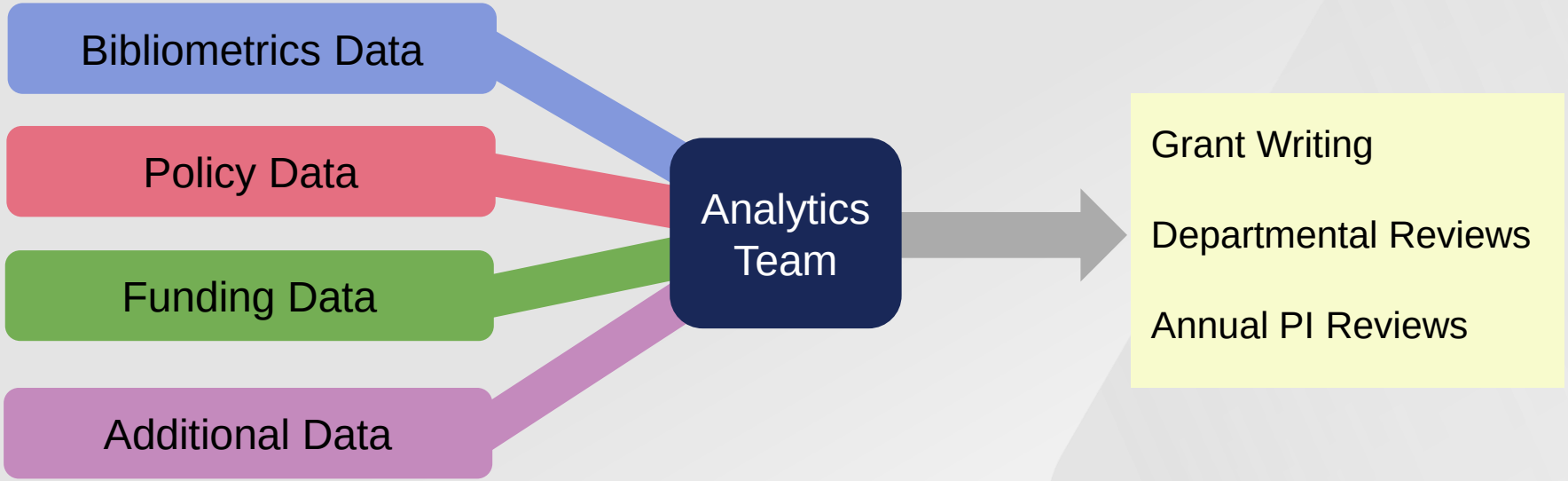
Research Analytics at UHN

Support decision making across UHN



The Power of Power BI

Power BI is a visualization software that is used by data professionals to create dashboards and reports.

Integrates data from different sources (SharePoint, Excel, etc.)

Easy Visuals

Interactive Insights

Big Data Handling

Advanced Analytics

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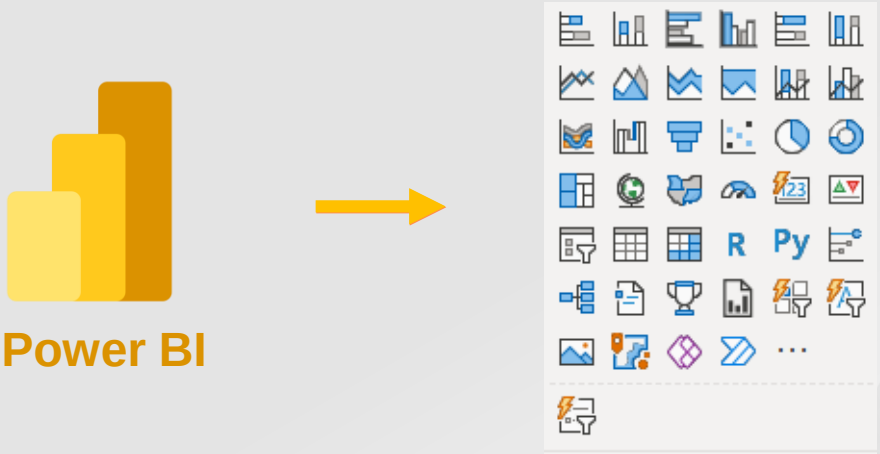
Customization beyond Power BI: Deneb

PowerBI is limited to stock visuals and doesn't allow for precise customization



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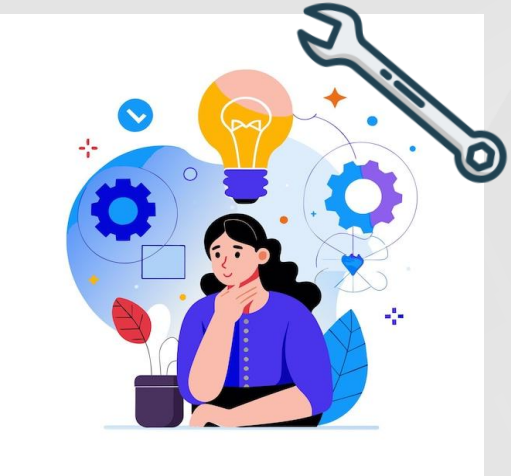
Customization beyond Power BI: Deneb

PowerBI is limited to stock visuals and doesn't allow for precise customization

Deneb



Disadvantages of Deneb

- Steep learning curve if you don't have front-end programming experience
- Sensitive to the limitations of JSON formatting

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Deneb Background

Visuals are written in Vega or Vega-lite visualization grammar in JSON format

```
"data": {"name": "dataset"},
"bounds": "flush",
"spacing": 15,
"mark": {
  "type": "area",
  "fillOpacity": 0.7,
  "strokeOpacity": 1,
  "strokeWidth": 1,
  "interpolate": "monotone"
},
"resolve": {
  "scale": {"y": "independent"}
},
"width": 700,
"height": 80,
"encoding": {
```

One piece of "coding" to remember!

Parameters are defined like below:

"**Parameter**" : **Value**

"**Width**" : **700**

Thankfully, templates can be imported from online to save a large portion of the coding!

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Workshop

5 minutes to install Power BI and open up the Power BI file!

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Workshop Outline

Overview of the data

Workflow overview

Workflow demo

Walkthrough of Deneb Interface

Common Customization Options

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Overview of the data

Researcher ID	Researcher Name	Paper ID	Publication Year	Citation %ile in Area	International Country Collaborator	Int. Country Long.	Int. Country. Lat.
	Reese	827	2021	38	Portugal	40.957	-7.9373
	Reese	824	2005	54	Peru	-12.664	-72.98
	Reese	832	2024	46	Peru	-12.664	-72.98
	Reese	817	2018	79	Australia	-24.578	133.582
	Reese	835	1984	80	Portugal	40.957	-7.9373
	Reese	821	1984	35	Brazil	-11.694	-48.978
	Reese	829	1980	44	Mexico	22.925	-101.68
	Reese	841	1992	66	Australia	-24.578	133.582
	Reese	822	2006	70	Mexico	22.925	-101.68

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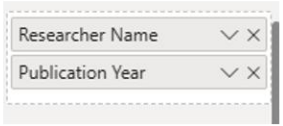
Template Workflow

Find a Deneb Template that you like online

Ask a GenAI what variables/fields are needed for this template to work using a standardized prompt

Open up PowerBI and create a new Deneb Visual



Import the fields you'd like to visualize, format, and rename them based on the GenAIs feedback

Select Vega or Vega-lite. Copy and paste the template into the Deneb specification and run

Make modifications as necessary

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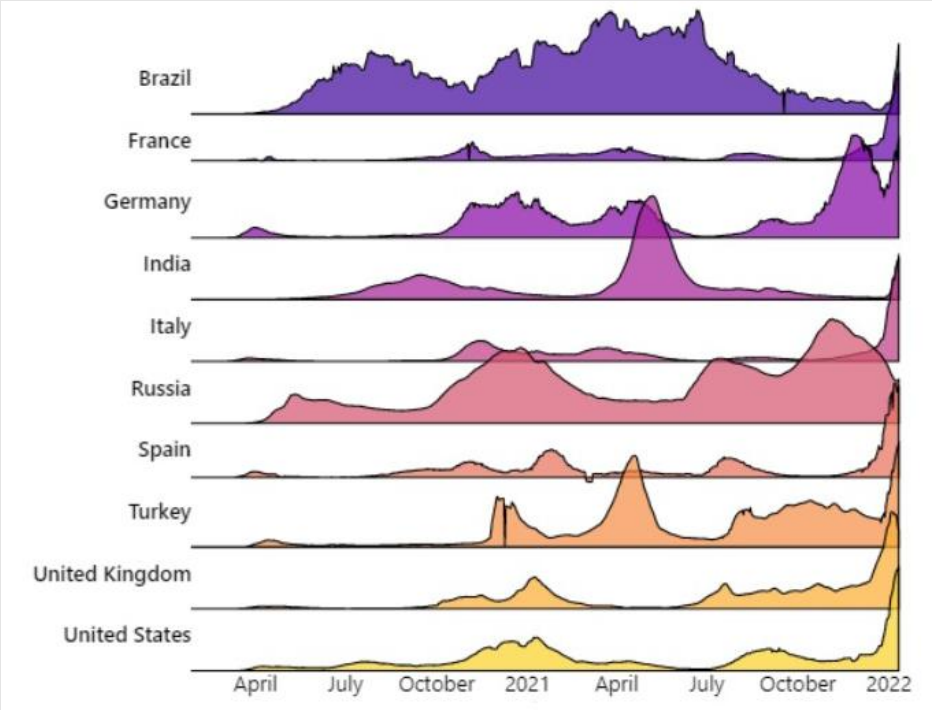
1. Find a Deneb Template Online



[Template Link]

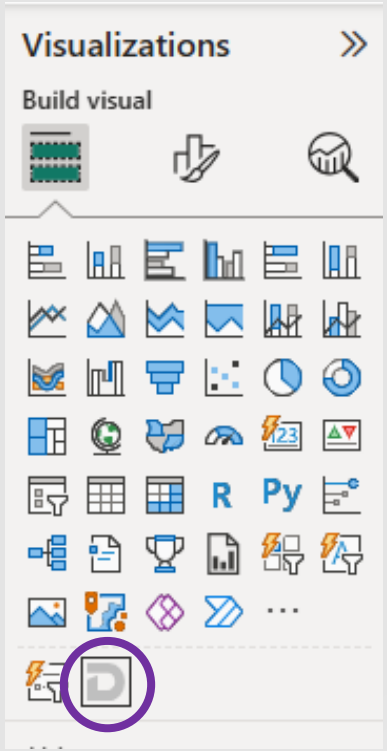
We will be using this template to plot the number of publications over time for 5 researchers

2. Use a standardized prompt to ask the GenAI how to map the variables in the script to the variables in your dataset

I want to create a visual off of a template in PowerBI using Deneb. If I'm using the attached code below. What variables will I need to import into my Deneb visual and what should they be named as?

Pasted Deneb Code

3. Open up Power BI and create a new Deneb Visual



Note. If you're not using the Power BI file I provided, you'll have to import Deneb from the Power BI store

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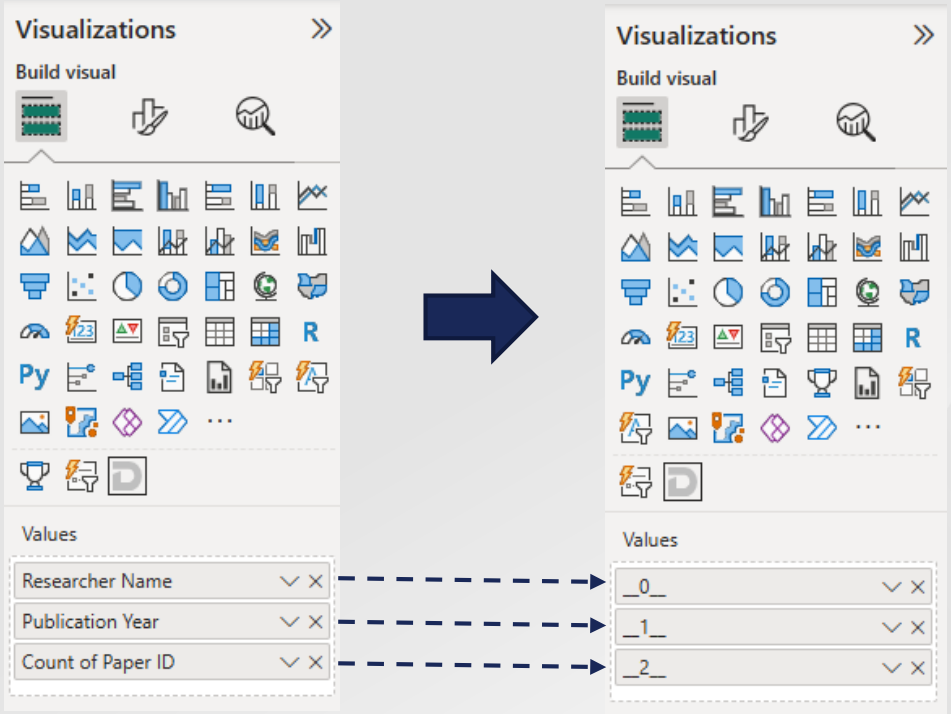
4. Import the data fields and format/rename them based on the GenAIs feedback



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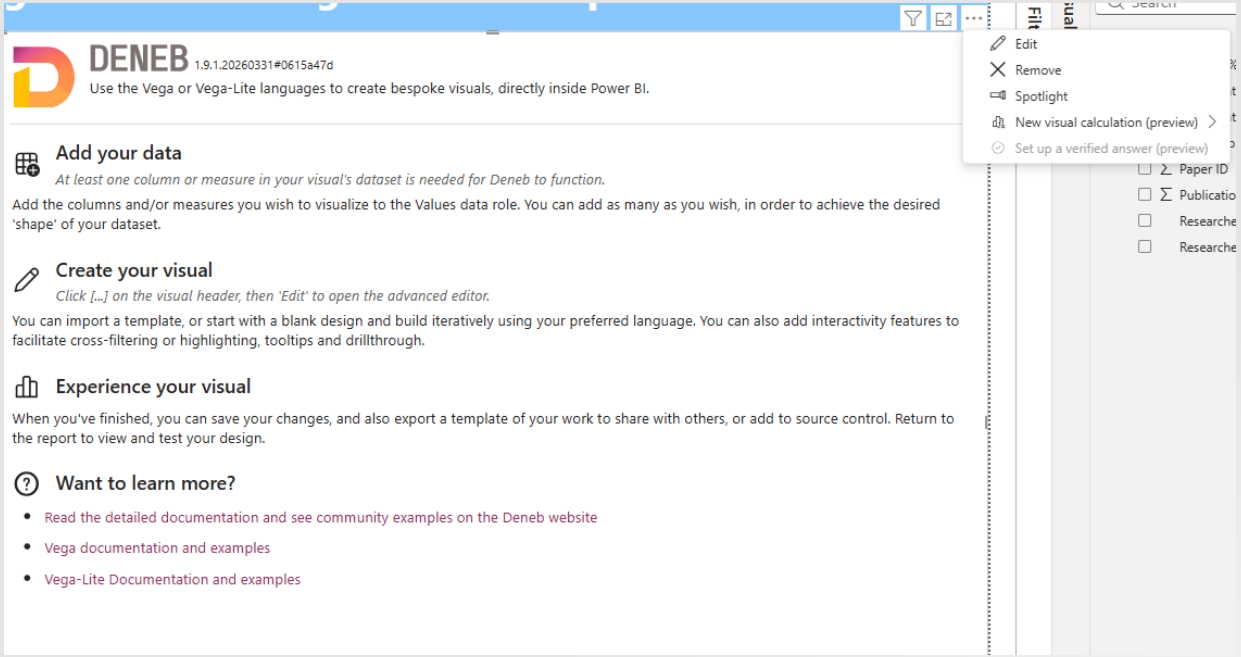
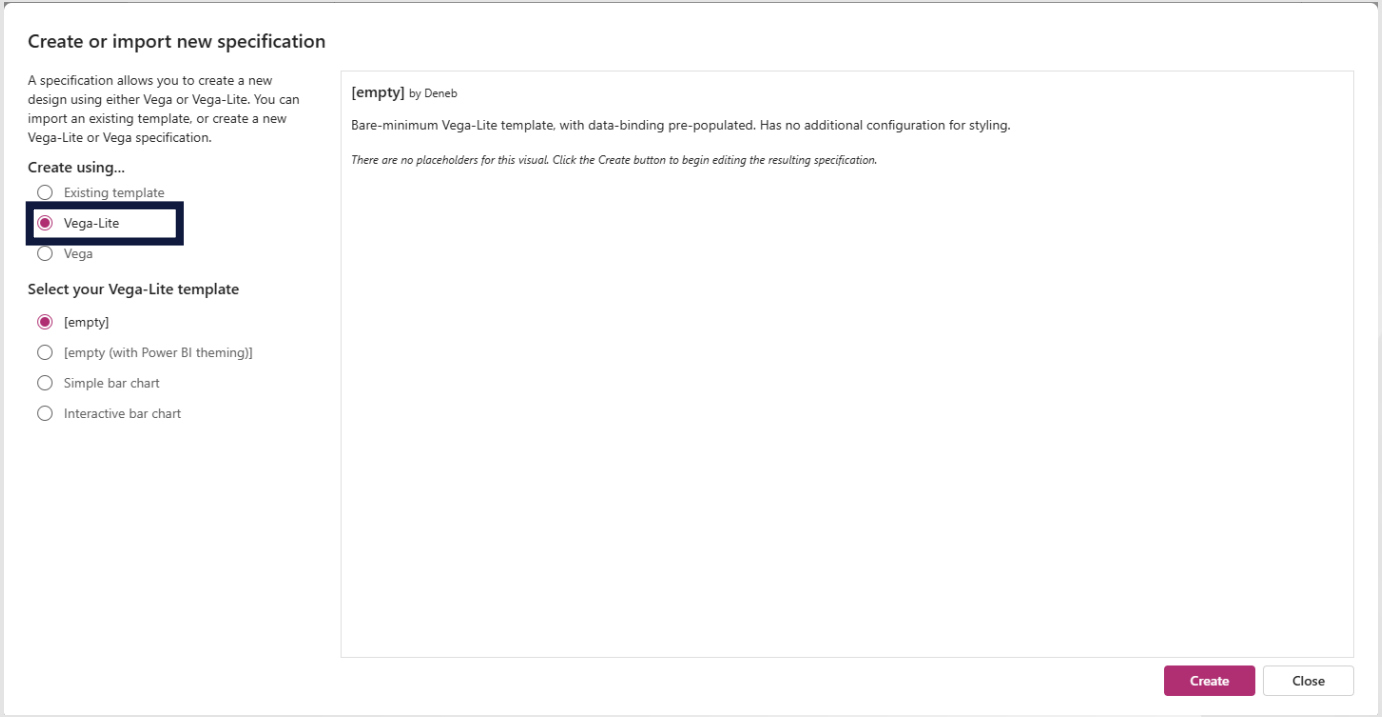
5a. Go to the editor



First, click the ellipses at the top right and then click edit

5b. Select Vega or Vega-Lite based on your template

In our example, we are using Vega-Lite



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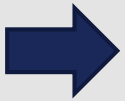
5c. Paste the template code in the specification and run

6. Make modifications as necessary

a. To change the x axis to year and rename the x axis

```
"encoding": {
  "x": {
    "title": "__1__",
    "field": "__1__",
    "type": "temporal"
  },
```



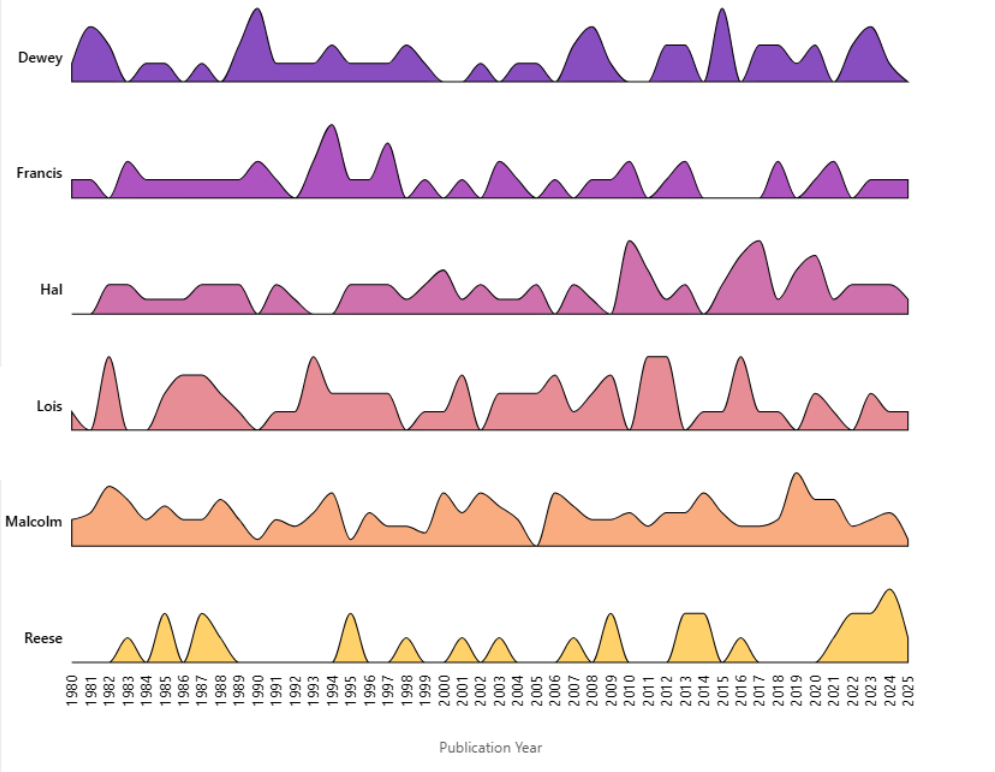
```
"encoding": {
  "x": {
    "title": "Publication Year",
    "field": "__1__",
    "type": "nominal",
    "axis":{
      "labelPadding":-50
    }
  },
```

b. To modify the visual to take up more space if needed

```
"width": 400,
"height": 20,
```

```
"width": 700,
"height": 80,
```

Admire your new Deneb Visual!



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