

Mage

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Issue: Ineffective Collaboration Between Data Scientists and Stakeholders at Company X

Company X grapples with a **communication breakdown** between data scientists and stakeholders (PMs, managers, etc). Collaborative efforts are time consuming and inefficient.

- Stakeholders rely on spreadsheets, lack coding confidence.
- Constant back-and-forth for minor changes hampers collaboration.
- Real-time collaboration in meetings is difficult, leading to time-consuming presentations.



Solution: Integration of Mage tools – **table** and **plot** with Notebook Environment

- Seamless integration with data scientists' notebook environment.
- Allows stakeholders to interact with presented work, make small changes using GUI widgets.
- UI resembles spreadsheets and visual tools, enhancing stakeholder comfort.
- Translated code tracks stakeholder changes, integrating seamlessly with data scientists' code.
- Eliminates the need for data scientists to redo work, saving valuable time and enhancing productivity.

1 user selects filter by **age < 65**

	age	workclass	fnlwtgt
0	90	?	77053
1	82	Private	132870
2	66	?	186061

2 **table** selects its filter template `$DF=$DF[$DF["$COL"]$EXPR]`
table marks the user's choice `$DF=$DF[$DF["age"] < 65]`
mage resolves the template as: `df = df[df["age"] < 65]`

3 mage adds the newly created code to the original notebook cell and runs it to update state

```
spec = { "mark": { "type": "bar" },
        "encoding": {
          "x": { "field": "education", "type": "nominal" },
          "y": { "aggregate": "count", "type": "quantitative" },
          "color": { "field": "income", "type": "nominal" }
        }
      }
%summon plot census_1 spec
```

Plot

Mark: bar

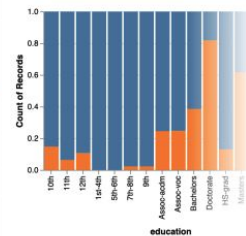
Encoding: Clear

X: A education

Y: COUNT()

Color: A income

Size: -



```
df = df[df["age"] < 65]
%summon table df
```

	age	workclass	fnlwtgt
14	62	Private	185261
20	50	Private	207480
21	64	Public	184076

Potential roadblocks

- The **restricted** set of **available actions** in the tools increases the risk of **conflicts** between code and GUI, requiring expert **troubleshooters**.
- For meaningful collaboration, more **multitool interactions** like table-code, table-viz, viz-viz, viz-code might be needed
- Risk of generating **redundant and obsolete code**, lowering overall **code quality**.
- Ideal for **data storytelling**, not suitable for complex programming tasks; may **frustrate** programmers.