Flexible DAG Trigger Forms (AIP-50)

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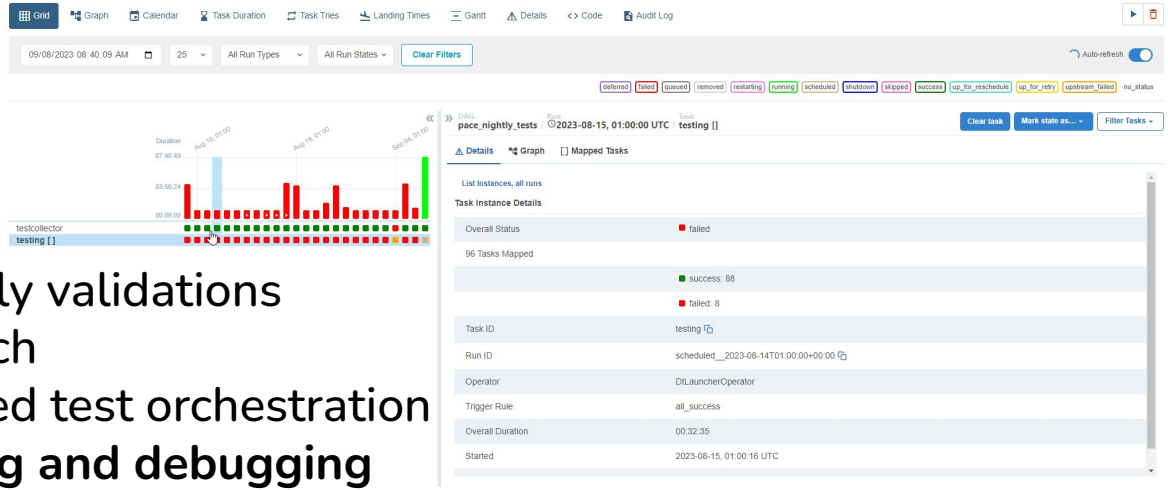
Triggering a DAG via UI – Is this a Problem?

Product Owner

Technical lead

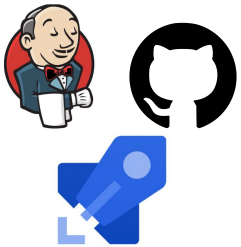
Open loop testing for verification and validation of highly automated driving functions

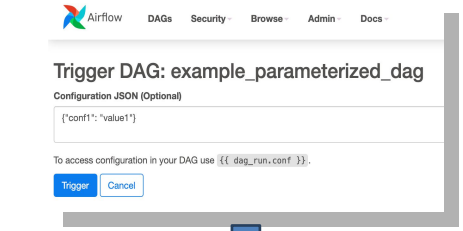


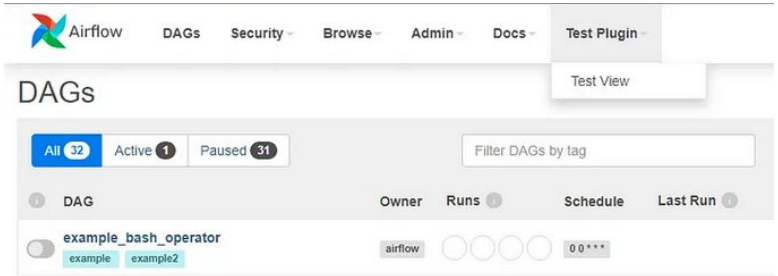
Use cases:

- Automated and scaled nightly validations
- Smoke testing on main branch
- Hardware and software based test orchestration
- **Parametrized manual testing and debugging**

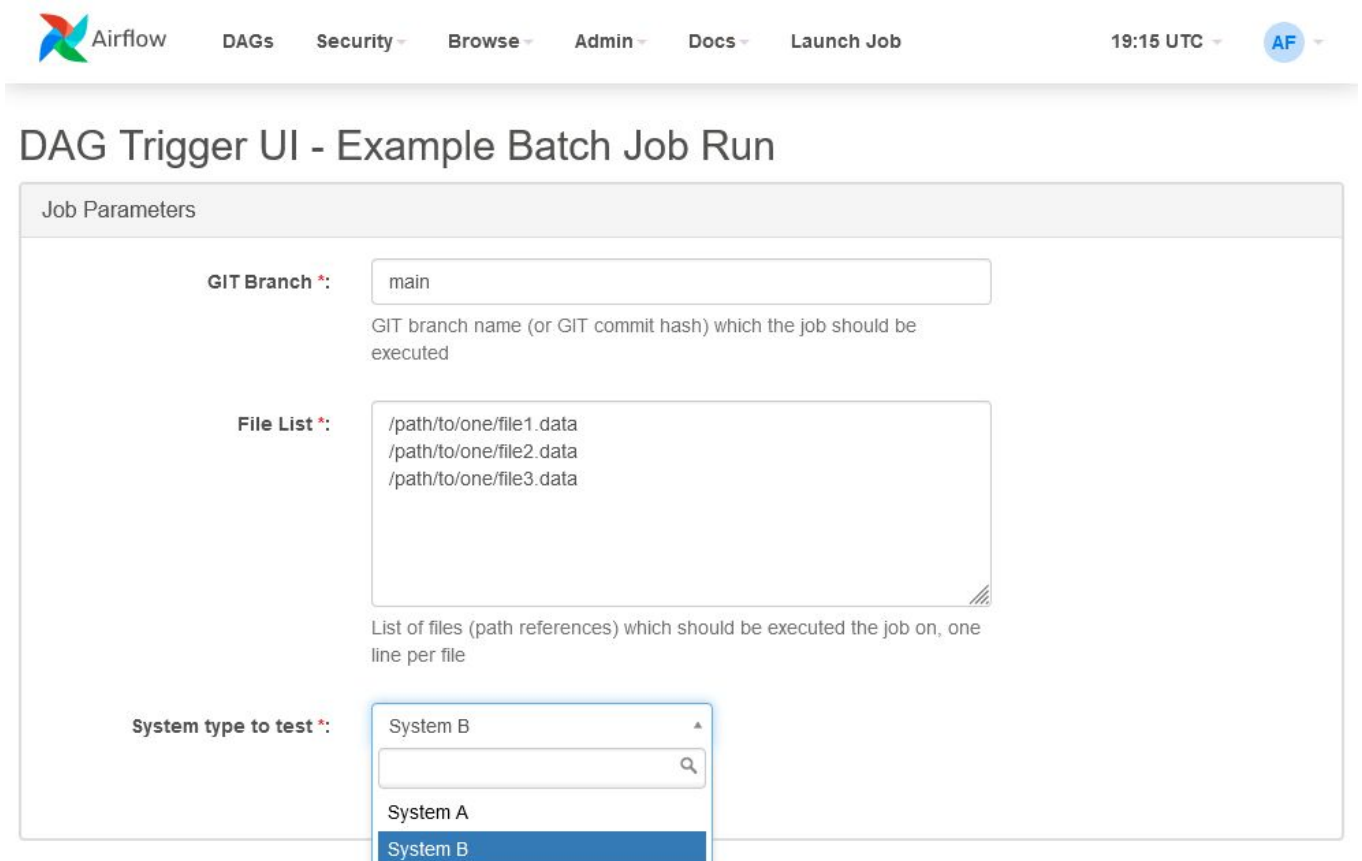
Triggering a DAG via UI – The Past







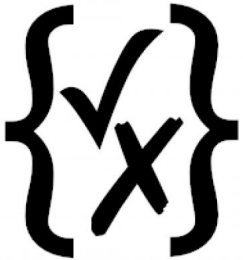
Triggering a DAG via UI – The Basics



Triggering a DAG via UI – The Basics

```python
with DAG(
    dag_id=Path(__file__).stem,
    description=__doc__.partition(".")[0],
    doc_md=__doc__,
    schedule=None,
    start_date=datetime.datetime(2022, 3, 4),
    catchup=False,
    tags=["example_ui"],
    params={
        "names": Param(
            ["Linda", "Martha", "Thomas"],
            type="array",
            description="Define the list of names for which greetings should be generated in the logs."
            " Please have one name per line.",
            title="Names to greet",
        ),
        "english": Param(True, type="boolean", title="English"),
        "german": Param(True, type="boolean", title="German (Formal)"),
        "french": Param(True, type="boolean", title="French"),
    },
) as dag:


    @task(task_id="get_names")
    def get_names(**kwargs) -> list[str]:
        ti: TaskInstance = kwargs["ti"]
    ...
```

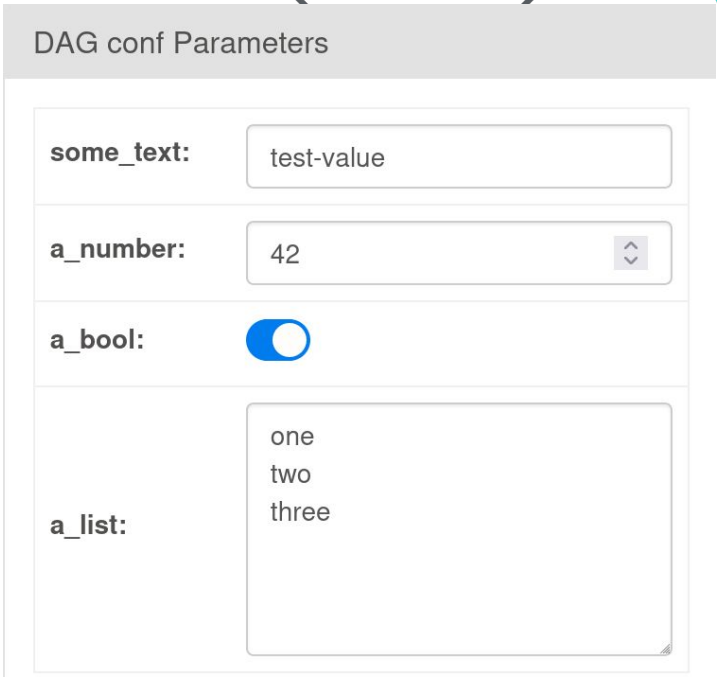


JSON Schema

Triggering a DAG via UI – Starting Simple

Fields detected by parameter type:

```
with DAG(
    dag_id="summit",
    params={
        "some_text": "test-value",
        "a_number": 42,
        "a_bool": True,
        "a_list": [
            "one",
            "two",
            "three"
        ],
    },
): ...
```

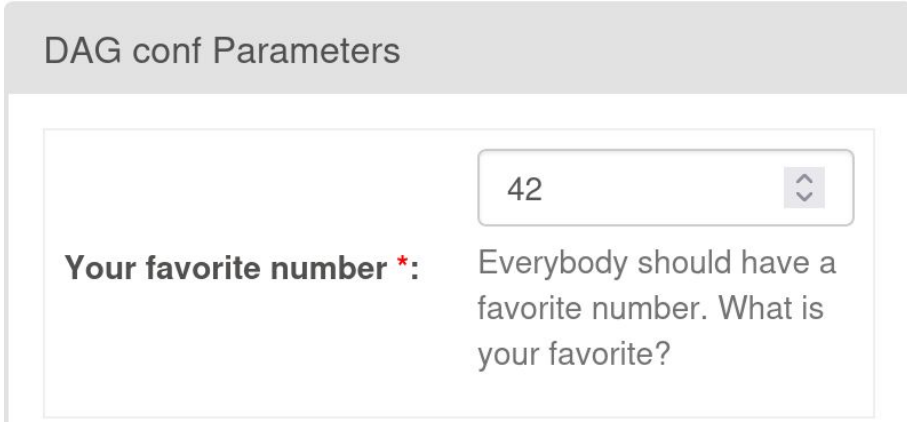


Limitations: No Data/Type Validation, Labels, Descriptions, Required Check

Triggering a DAG via UI – Param Beautyness

Fields defined with **Param** object:

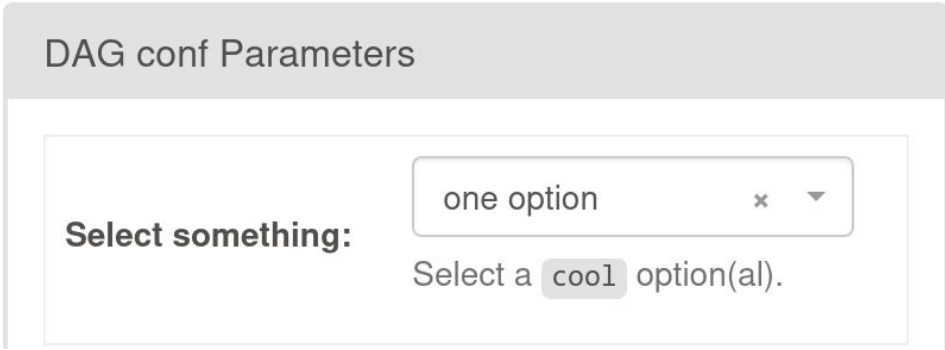
```
with DAG(
    dag_id="summit",
    params={
        "a_number": Param(
            42,
            type="integer",
            title="Your favorite number",
            description="Everybody "
            "should have a favorite number. What is your favorite?",
        ),
    },
): ...
```



Benefits: JSON Schema Validation, Required Entry Check, Labels, Descriptions

Triggering a DAG via UI – Many More Options

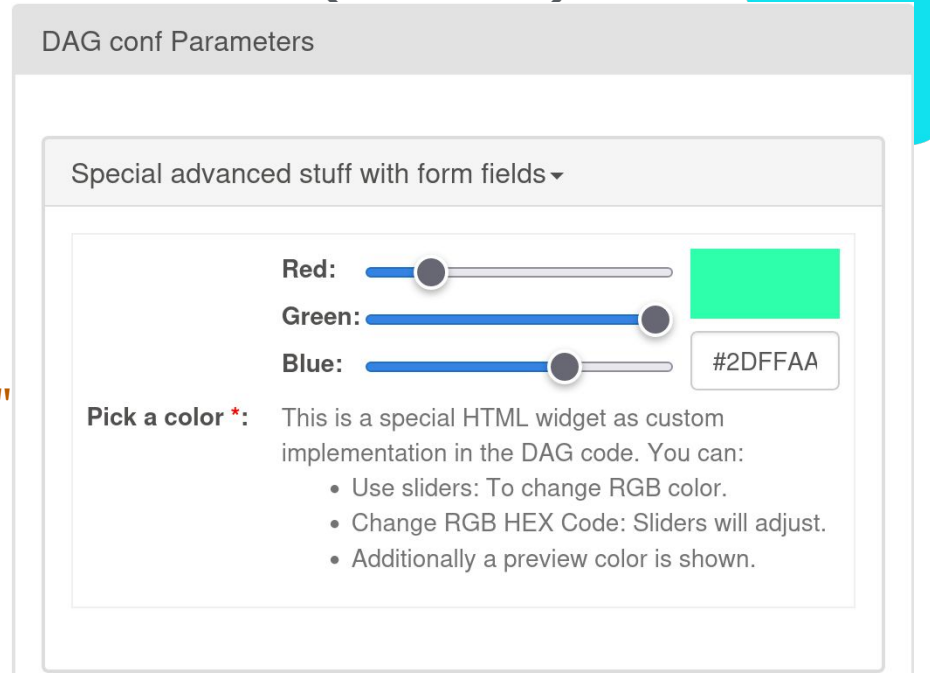
```
with DAG(
    dag_id="summit",
    params={
        "select_a_item": Param(
            "c",
            type=["string", "null"],
            title="Select something",
            description_html="Select "
            "a <code>cool</code> option(al).",
            enum=["a", "b", "c"],
            values_display={"a": "not good", "b": "better", "c": "one option"},
        ),
    },
): ...
```



Benefits: JSON Schema Validation, Required Entry Check, Labels, Descriptions

Triggering a DAG via UI – Advanced Stuff

- `date`, `datetime`, `time`, `object` types
- `examples` for proposals to have free text bypassing the limits of `enum`
- `array` type for lists of strings or other `items` with JSON Schema types
- `section="Special advanced stuff..."` ...generates folded areas in the form
- `const` for hidden fields
- `custom_html_form` for all other stuff...



Take a look to example_params_ui_tutorial DAG and the [Params documentation]

Triggering a DAG via UI – Timeline & Outlook

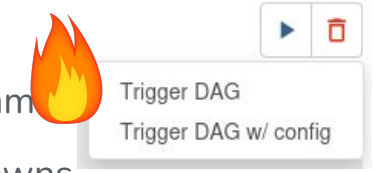
Airflow 2.6.0 – Initial Version

Airflow 2.6.1 – Fix rendering empty Array

Airflow 2.6.3 – Fix Number vs. Decimal

Airflow 2.7.0

- Trigger Button/Skip UI if no Param



- Multi-Select, Labels on Drop-downs, Proposed values, Non-String Arrays
- Bugfix JSON Propagation, Force Un-Pause

Airflow 2.7.1 – Bugfix Render "0" Default

Airflow 2.7.2 – Bugfix `None` values

Roadmap & Discussions

- No Defaults in Required Fields (31301)
- Sync JSON <-> Form Fields (31390)
- Pre-Populate Fields via URL (32859)
- Handling of Empty Fields (Null vs. Empty) (33923)
- More Field Types...?

➜ **Looking forward for you contribution!**

Questions?

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