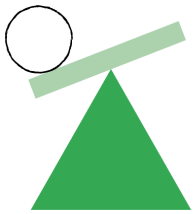
Errors + Grace Failure

Chapter worksheet



Instructions

Block out time to get as many cross-functional leads as possible together in a room to work through these exercises & checklists.

Exercises

1. Error audit [~1 hour]

Collect canonical error examples to define existing and potential errors and solutions.

2. Quality assurance [~30 minutes]

Prioritize how you'll test and monitor errors and reporting so you can hear from your users early and often.

1. Error audit

As a team, brainstorm what kinds of errors users could encounter. If your team has a working prototype of your feature, try to add current examples.

Use the template below to start collecting error examples so your team has a shared understanding about the different error types and solutions your model could produce.

Error	**Users**
Add screenshots, pictures, or logs to show what the user sees when encountering the error	**User stakes** ☐ low ☑ high
Error type ☐ **System limitation** - Your system can't provide the right answer, or any answer at all, due to inherent limitations to the system. ☐ **Context** - The system is "working as intended," but the user perceives an error because the actions of the system aren't well-explained, break the user's mental model, or were based on poor assumptions. ☑ **Background** - Situations in which the system isn't working correctly, but neither the user nor the system register an error.	

Error sources

Take each error identified above through these questions to determine the source of the error:

🔴 HIMAS Alert: schema_and_statistics.extract_all_schemas Failed in himas_bigquery_schema_validation

Inbox ×

Summarise this email

HIMAS Data Pipeline <yashkharess20@gmail.com>
to me, mohanbhosale6, raunaksinghkhalsa, manjushamg26, margishah2003

Mon 27 Oct, 22:35 (16 hours ago)

HIMAS Task Failure

Healthcare Intelligence Multi-Agent System

DAG: himas_bigquery_schema_validation

Task: schema_and_statistics.extract_all_schemas

Logical Date: 2025-10-28 02:34:12+00:00

Try: 1 out of 1

Host: c93383975277

🔴 Error Details

```
'StorageHandler' object has no attribute 'mkdir'
```

📋 View Logs ✓ Mark Success

HIMAS - Healthcare Intelligence Multi-Agent System

Automated Alert from Apache Airflow

Input error signals

N/A - This is a data pipeline, not an AI inference system
However, users may not anticipate automatic schema baseline updates

- ☐ Did the user anticipate the auto-correction of their input into an AI system?
- ☐ Was the user's habituation interrupted?
- ☐ Did the model improperly weigh a user action or other signal? If yes, likely a context error.

Relevance error signals

First pipeline run has no baseline for comparison
Demo dataset (100 patients) may not represent production scale

- ☐ Is the model lacking available data or requirements for prediction accuracy?
- ☐ Is the model receiving unstable or noisy data?
- ☐ Is the system output presented to users in a way that isn't relevant to the user's needs?

System hierarchy error

Clear hierarchy: Airflow orchestrates → BigQuery processes → DVC versions

- ☐ Is your user connecting your product to another system, and it isn't clear which system is in charge?
- ☐ Are there multiple systems monitoring a single (or similar) output and an event causes simultaneous alerts? Signal crashes increase the user's mental load because they have to parse multiple signals to figure out what happened and what to do next.

Potential issue: Both Airflow task failure AND email alert AND validation report
Can cause alert fatigue if not properly configured

Failure state

- ☐ Is your feature unusable as the result of multiple errors?

Yes, if GCP credentials fail AND DVC push fails AND email alerts fail
Mitigation: Each component has independent error handling

Error resolution

Once you have identified the source or sources of the error, complete the sections below for each of the errors in the template with your team's plan for improving / reducing the identified error: Create as many copies as you need to cover all your identified errors.

Error rationale	Solution type
Why the user thinks this is an error: **Upstream table creation failed but didn't raise exception. System continues but produces invalid statistics. Neither user nor system initially registers this as an error.**	☐ Feedback ☑ User control ☐ Other:

Error resolution

User path:
User reviews statistics → Notices zero row counts → Investigates upstream tasks → Finds SQL execution error → Fixes SQL query → Re-runs pipeline
Examples: User sees errors, gives feedback, completes task; User sees error, takes over control, completes task

Opportunity for model improvement:

Example: User's feedback logged for model tuning
Add row count validation after each table creation
Raise exceptions for zero-row tables in critical layers
Implement data lineage tracking to trace empty tables to source
Log all table creation with row counts for audit trail

2. Quality assurance

Getting your feature into users' hands is essential for identifying errors that your team, as expert users, may never encounter. Meet as a team to prioritize how you want to monitor errors reported by users so that your model is being tested and criticized by your users early and often.

As you have this discussion, consider all potential sources of error reporting:

- Reports sent to customer service
- Comments and reports sent through social media channels
- In-product metrics
- In-product surveys
- User research (out-of-product surveys, deep dive interviews, diary studies, etc.)

QA template

Goal **Monitor pipeline execution success rate and catch critical failures immediately**	**Review frequency** ☑ Daily ☐ Weekly ☐ Monthly ☐ Other:
Method **Automated email alerts on pipeline failure** **Airflow UI dashboard monitoring** **Check validation reports for anomalies**	
Start date: **October 28, 2025** Review / End date: **December 12, 2025**	