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Geodatabase Integrity Solutions℠

GeoData Modeler workflow for data model updates

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GeoData MODELER

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Introduction

Data model changes are a standard part of any geodatabase implementation. How they are requested, tracked, implemented, tested and verified can vary widely for each organization. This document will detail the best practices for managing data model change with this process and GeoData Modeler.

Data Model Change Requests

Data Model Change requests can originate from several sources; user defect tickets, user enhancement requests and application development requirements for new functionality. The first step to managing change is to track the change requests. There are several web-based incident tracking tools available that can track the originator, the key decisions, the implementation strategy, test cases and test results.

Application development likely has a larger set of requirements involving interface, data flow interaction, and integrations to other systems. Developers and the business analysts work together to create a detailed design specification. The detailed design specification should include a section with data model change requirements.

Data Model Change Implementation

Data Model change implementation consists of review of the model change, implementation in all of the lower environments and finally into production.

Data Model Change Request Triage

Each data model request is reviewed for consistency compared to the current data model. For instance consistency of naming conventions, columns types, domain values. The intent is to use existing precedent for naming conventions and column types to create a consistent geodatabase. Existing names can easily be viewed using the power of filtering and sorting within the Excel spreadsheet. If a request is inconsistent with the data model, then the request is modified, if possible to best fit the current naming conventions.

Similarly, if a model request adds a significant number of duplicate columns that exist in other tables of feature classes, or adds annotation feature classes to a geodatabase that uses labeling exclusively, then the request will need to be modified to fit the current geodatabase precedence.

Data Model Spreadsheet Update

Each model change is entered into the data model spreadsheet. The information in the requirements tracking system should be enough to make the model change. A data model modification spreadsheet that mirrors the data model spreadsheet in tabs and columns is recommended to be attached to each requirement. Some requests may require multiple tabs to be modified, for instance if a column is to be added that has a domain and the domain has new values, then three tabs must be edited.

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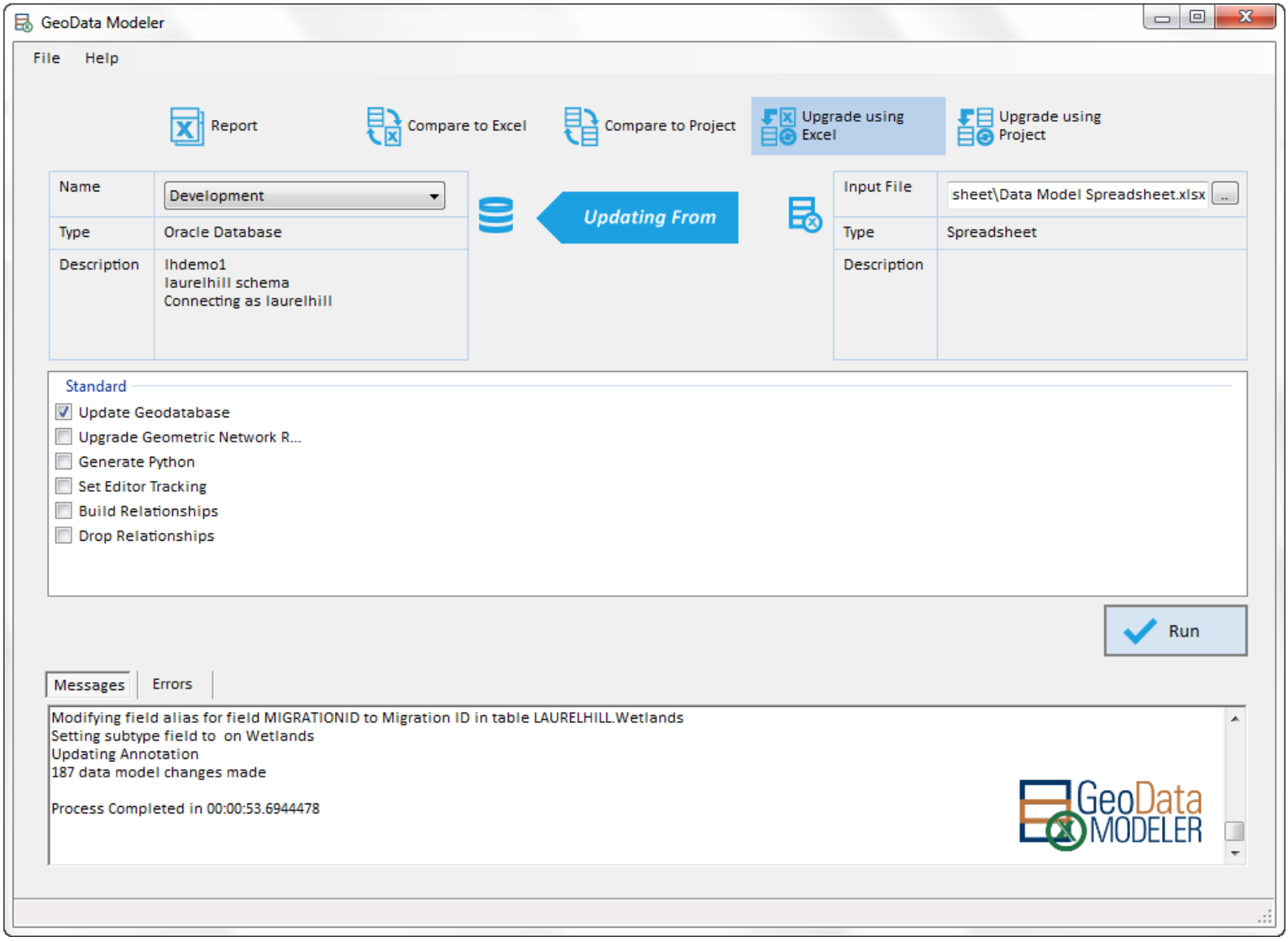
Apply Data Model Updates to Development Environment

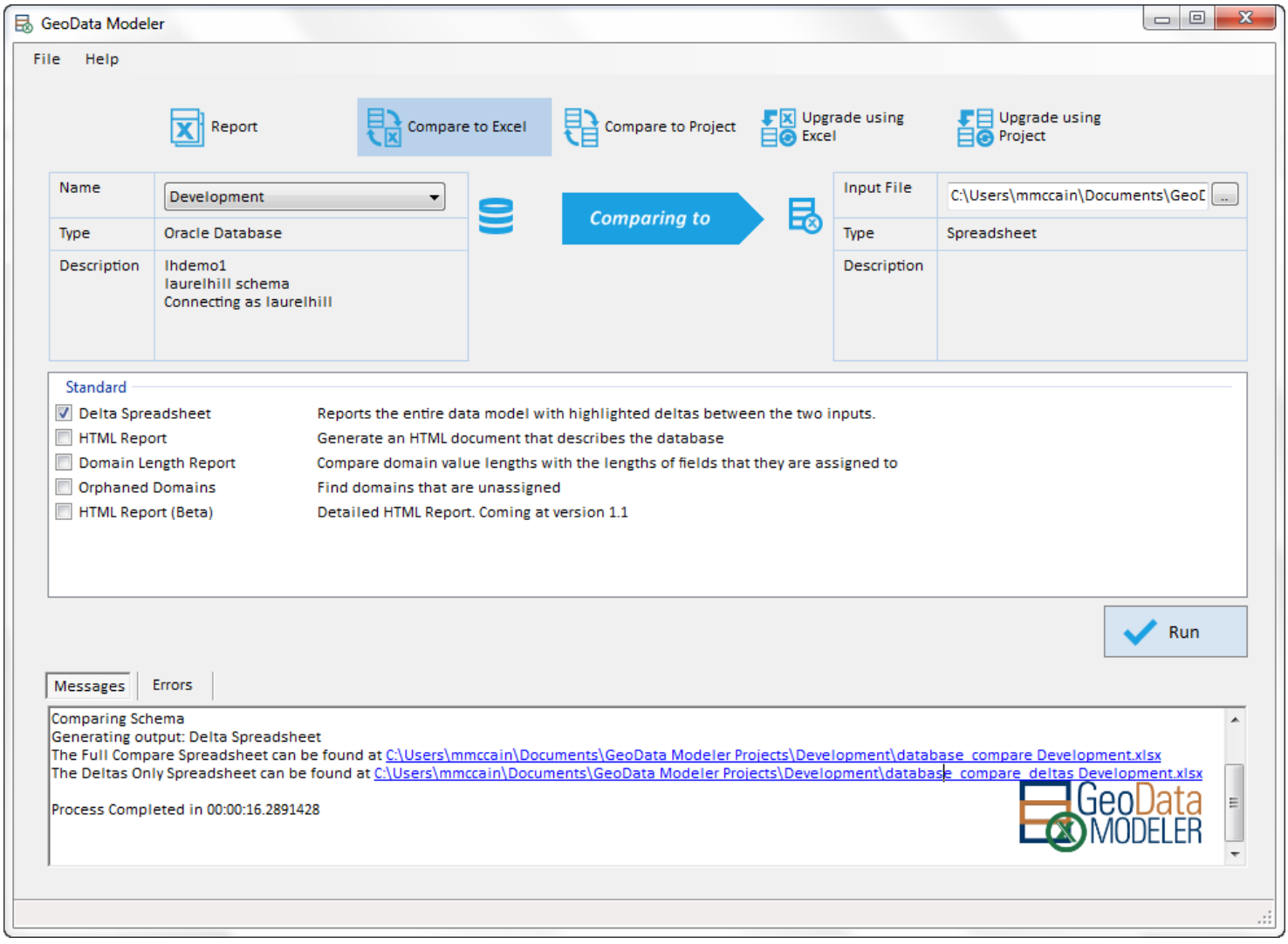
Data Model updates are applied to the development geodatabase with GeoData Modeler. To apply the model updates, open GeoData Modeler. Create a project for the development geodatabase.



In the example above 187 model changes we made to the development geodatabase.

Unit Test Development Data Model Updates

Once the updates are applied, they must be tested. There are 2 methods for testing; confirm changes in ArcCatalog as a manual unit test, or run a comparison between the data model spreadsheet and the development geodatbase. Below is the comparison to the data model spreadsheet:



The key tab in the compare deltas is the Summary tab. This tab summarizes the tabs that have deltas. Ideally, the summary should show 0 deltas for each tab on the left, or several deltas between the spreadsheet and the database on the right. All deltas should be cleared as part of the unit testing of the model updates.

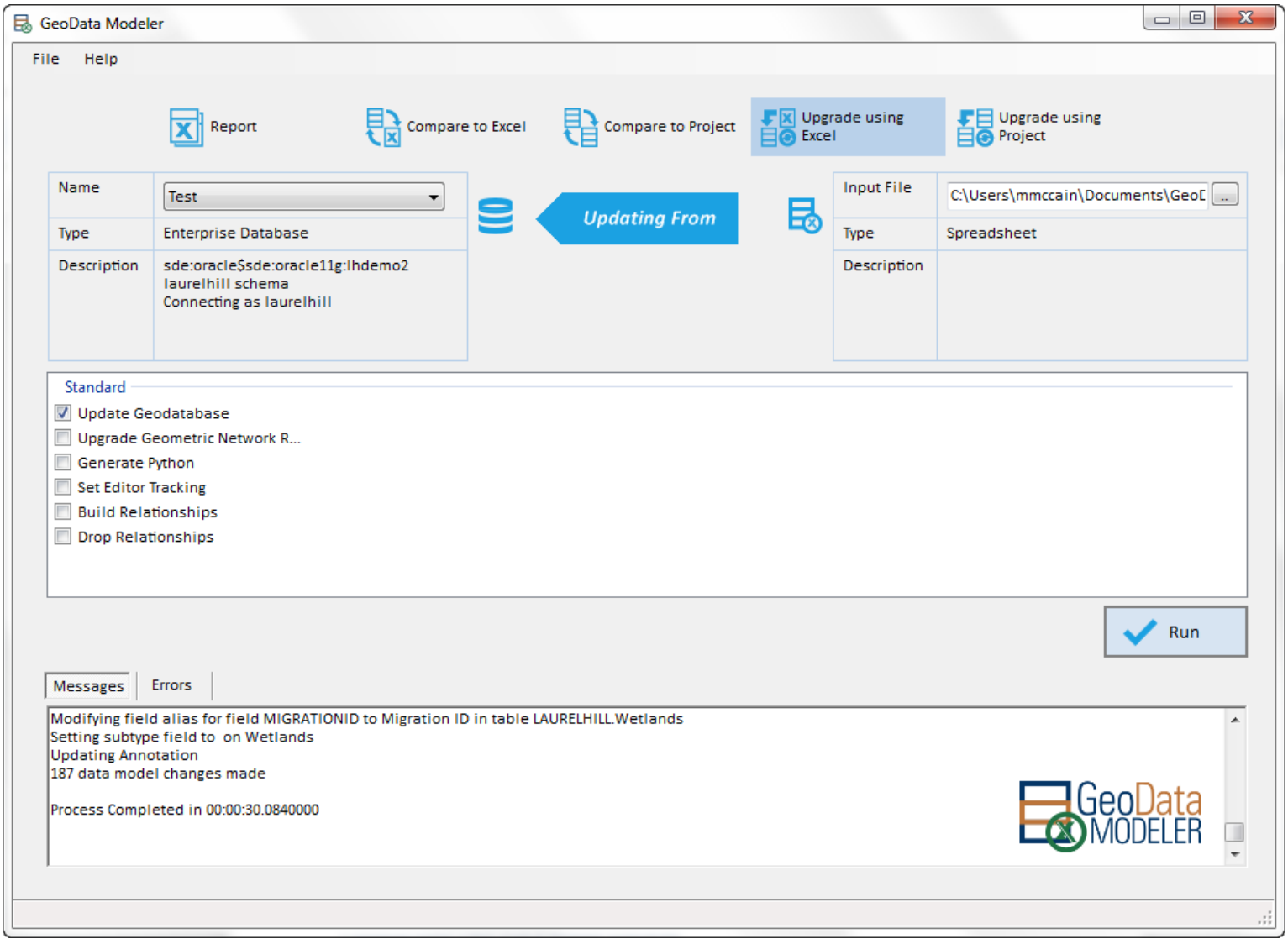
Sheet	Delta Count
Spatial References	0
Feature Datasets	0
Tables	0
Fields	0
Domains	0
Domain Values	0
Relationships	0
Anno Feature Classes	0
Anno Classes	0
Subtypes	0
Field Subtypes	0
GN Junction Rules	0
GN Edge Rules	0
Table Model Names	0
Field Model Names	0
Table Programs	0
Field Programs	0
Indexes	0

OR

Sheet	Delta Count
Spatial References	0
Feature Datasets	1
Tables	2
Fields	68
Domains	2
Domain Values	9
Relationships	0
Anno Feature Classes	0
Anno Classes	0
Subtypes	0
Field Subtypes	2
GN Junction Rules	0
GN Edge Rules	0
Table Model Names	0
Field Model Names	0
Table Programs	0
Field Programs	0
Indexes	0

Apply Data Model Updates to Test Environment

To apply the data model changes to the Test environment, open GeoData Modeler. Create a project for the Test database. Choose the Data Model Spreadsheet with the model modifications. Click run to apply the changes.



Unit Test data model updates

Once the updates are applied, run a comparison of the updated Test geodatabases and the spreadsheet. Review the delta spreadsheet to determine if there are any issues with the update. Perform manual data model updates if necessary.

It is recommended that the testing team manually review each of the data model changes that are applied to the Test environment. Once completed, the model updates are ready to be applied to the QA environment.

Apply Data Model Updates to QA or Pre-Production Environment

To apply the data model changes to QA, open GeoData Modeler. Create a project for QA or Pre-Production. Choose the Data Model Spreadsheet with the model modifications. Click run to apply the changes.

Comparison Test Data Model updates

Once the updates are applied, run a comparison of the updated QA and the spreadsheet. Review the delta spreadsheet to determine if there are any issues with the update. Perform manual data model updates if necessary.

Once QA regression testing is complete, the data model updates can be applied to the production data model during a production cutover.

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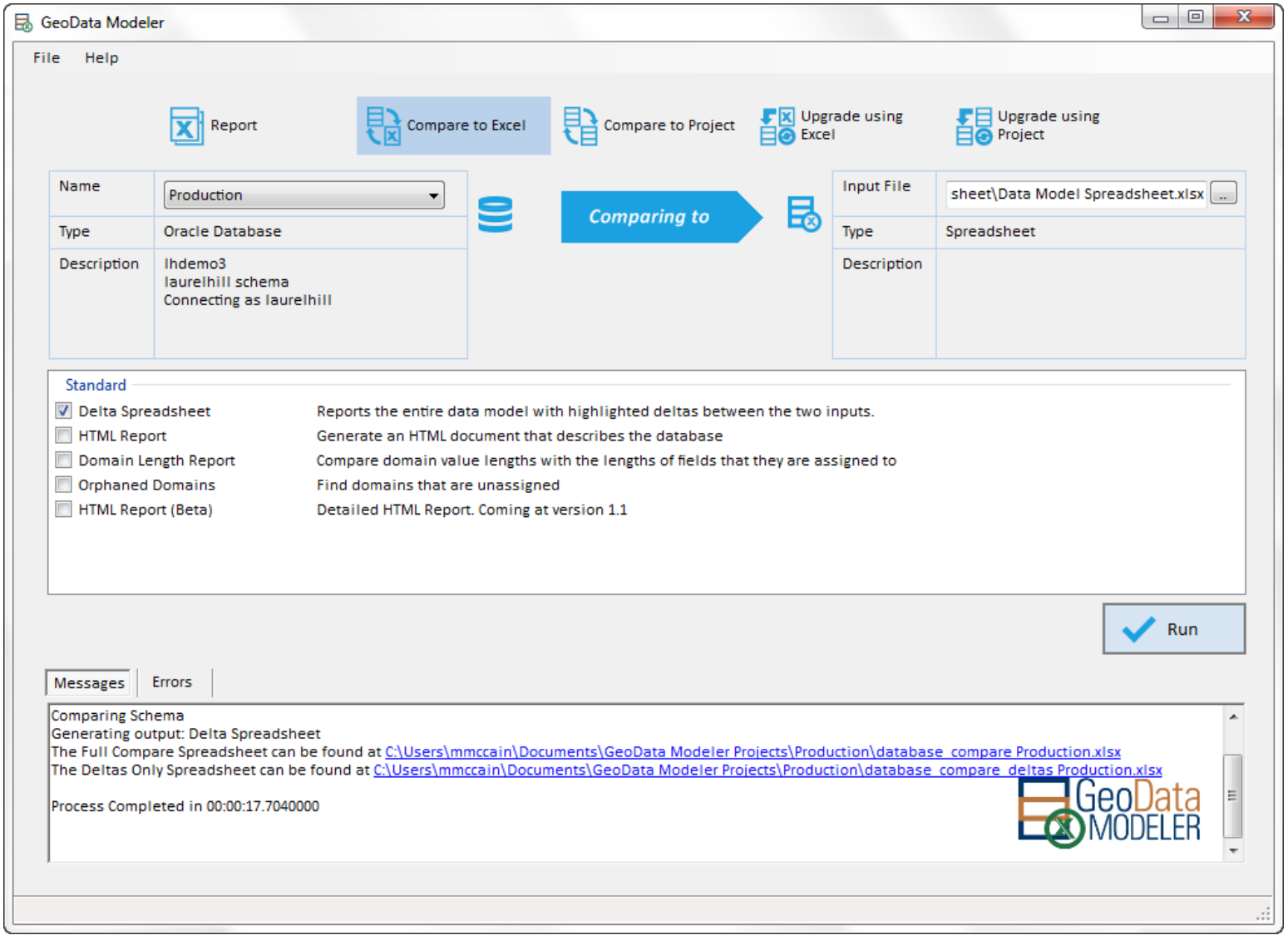
Run Comparison for Release Note Creation

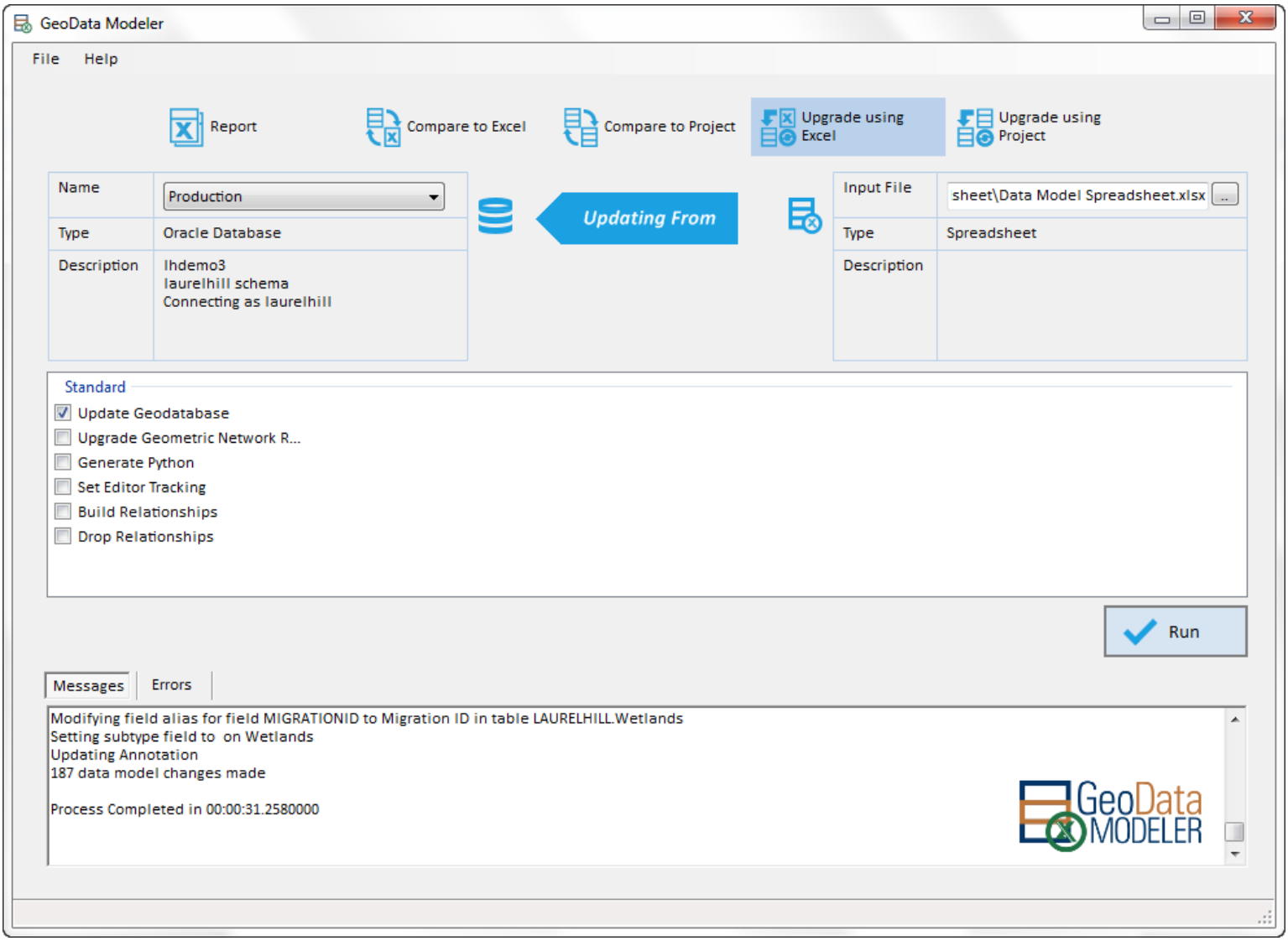
To assist the line of business with release note creation for data model updates, a comparison is performed between the current production model and the Data Model Spreadsheet. This will show deltas for each change along with the change level meta data that was added for each change. This will greatly reduce the time necessary for the business lead to create release notes for the release.



Apply Data Model Updates to Production Environment

Once all model changes have passed regression, they can be pushed to production. This process should be done as part of an outage. The outage should include users posting their session and having their access locked. To update the data model, the owner of the database must be able to create schema locks without encountering table locks.

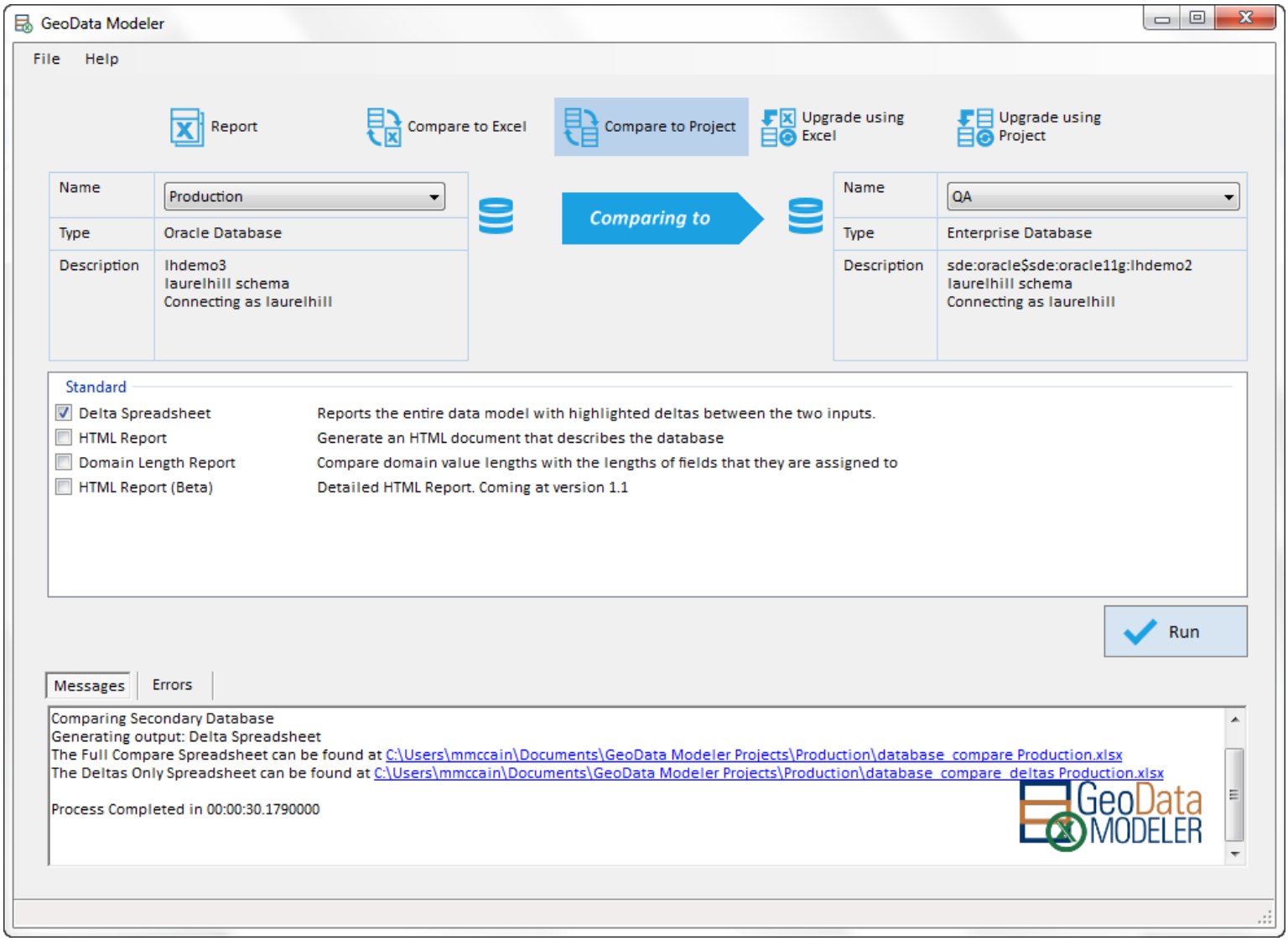
Additionally, the production geodatabase should be fully backed up before the data model updates are applied, as part of a standard cutover procedure to ensure the ability to roll back any changes made during the cutover.



Final Production Comparison

A final database to database comparison is required to confirm that all changes have been made correctly, and that the production environment matches the QA environment.

The final delta spreadsheet should not contain any deltas for ArcGIS or ArcFM properties. Any deltas should be carefully reviewed. If necessary, changes and modifications should be made to production to completely sync up with the QA environment.



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Data Model Update Process Flow