

# Traceability Matrix with Analytics

Blueprint

Storyteller

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## Overview

A traceability matrix (or gap analysis) allows users to identify the traces, links, or gaps between a specified set of artifacts. There are numerous benefits and use cases that stakeholders leverage when creating a traceability matrix. These include minimizing risk and rework to your products or projects by ensuring that artifacts that are being used to define your solution to IT (i.e. Features, Epics, User Stories), have the traces they need to things like compliance artifacts, non-functional requirements, or business rules.

Identifying where gaps exist as early as possible, allows for your teams to take action to shore them up prior to development execution, drastically reducing downstream costs and delays.

The screenshot shows a Microsoft Excel spreadsheet with a PivotTable titled 'International Restrictions'. The PivotTable is set to show a matrix of data. The columns represent various categories, and the rows represent specific items. The data is as follows:

	International Restrictions	Apply via mail	Authentication	Book Flight	Branding	Calculate Price	Change PW Proc
5 Row Labels							
6 Account Preference Options							
7 Airport Improvement Fee							
8 All systems will be secure							
9 Almonte Bank Promotion							
10 Application Process per Standard Procedures	1						
11 Applications Processed less than 2 days							
12 Applications Reviewed by Manager							
13 Apply in Person							
14 Apply Online		1					
15 Apply via mail							
16 Capture Contact Information							
17 Check Flight Status							
18 Credit Check Confirmation		1					
19 Default departure date							
20 Details & Properties Defined On Create							
21 Details & Properties Defined On Create - Folder from Home							
22 Details & Properties Visible On View							
23 Employees can apply							
24 Federal Taxes							
25 Flight Check-in 24-Hour Rule							
26 Fuel Surfax							
27 International Restrictions							
28 International Transit Fee							
29 Make Payment	1						
30 Modify ID and PW							
31 Online Flight Check-in							
32 Process easy and fast for customers							
33 PW Format							
34 Rejected Applications get Letter							
35 Retrieve Flight Status							
36 Senior's Discount							
37 Successful Applicants are sent package							
38 System available for customers							
39 Transit Tax							
40 User ID and PW Creation							
41 User ID Format							
42 Ways to apply for credit							
43 Grand Total	1	1	2	1	1	2	1

Users can create a traceability matrix outside the Storyteller interface by using Analytics, in conjunction with most BI (Business Intelligence) tools like Microsoft Excel's PowerPivot.

## Prerequisites

To create a traceability matrix, users should:

- Have Blueprint Analytics installed and licensed
  - Have access to, and a good understanding of how to connect your BI tool to [Blueprint Analytics](#)
  - Have projects and users configured accordingly with permissions set to provide data for Blueprint Analytics.
- For more information on configuring projects and users for Analytics, see the [Blueprint Analytics User Guide](#).

## Steps

Microsoft Excel's PowerPivot is used for this tutorial and example to create a traceability matrix on Functional Requirements and Business Rules to see what the gap analysis looks like between the two and ensure that all Functional Requirements are linked to Business Rules.

1. Initiate Analytics in Storyteller or Blueprint.
2. Launch Microsoft Excel's PowerPivot.
3. Import your Blueprint data into Microsoft Excel by creating a data source connection.

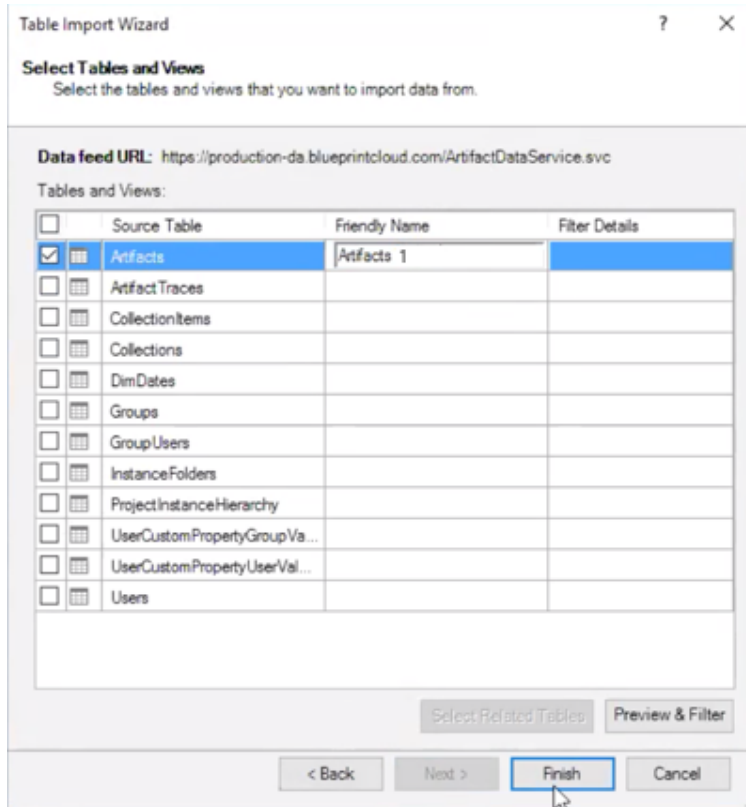
For the traceability matrix we want to create, we pull in the following tables in order to have a source:

- Artifacts
- ArtifactTraces
- CollectionItems
- Collections
- DimDates
- Groups
- GroupUsers
- InstanceFolders
- ProjectInstanceHierarchy
- UserCustomPropertyGroupValues
- UserCustomPropertyUserValues
- Users

For a step-by-step guide on how to import Blueprint data into PowerPivot, see the **Importing Blueprint data in PowerPivot** section in the [Blueprint Analytics User Guide](#).

4. Create an additional data source connection in order to be able to pivot on a source and a target artifact for the trace matrix.

For the Functional Requirements to Business Rules traceability matrix we want to create, we import Artifacts as the source table for our additional data source and rename it to Artifacts 1. This gives us a target artifact to pivot on.



5. Import both feeds.

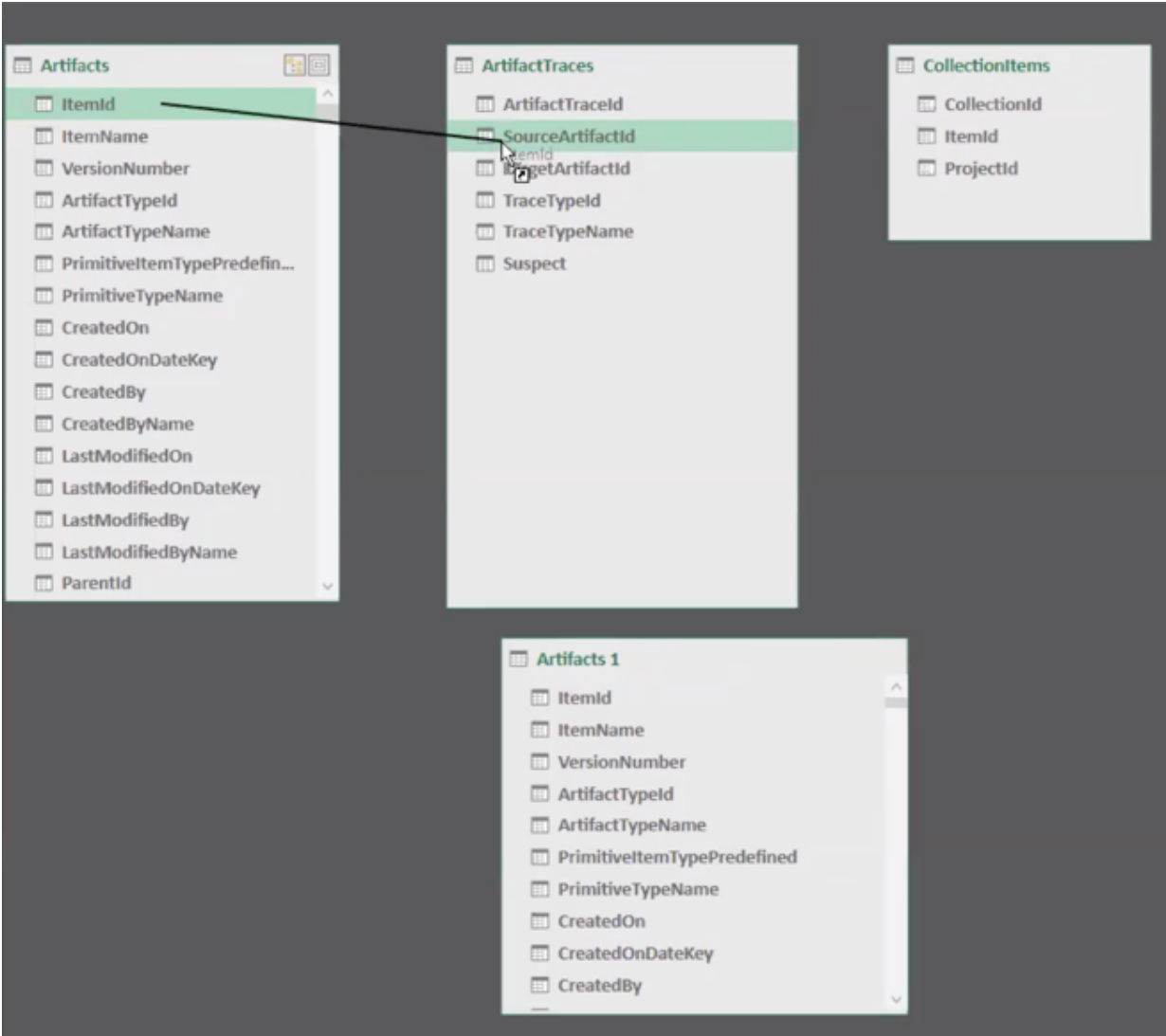
**Note:** The import time depends on the amount of data being imported.

6. Perform a table join from the Artifacts table (Source), to the ArtifactTraces table, and subsequently, to the Artifacts 1 table (Target).

This procedure connects the Artifacts table (the source that holds the artifact information like the ArtifactTypeName, ArtifactTypeId, and other attributes) to the ArtifactTraces table (that holds all the trace information such as what kind of TraceTypeIds are associated as a source, what kind of traces are suspect, etc.) and the Artifacts 1 table which is the additional data source and table we pulled in that handles all the information for the targets of the trace.

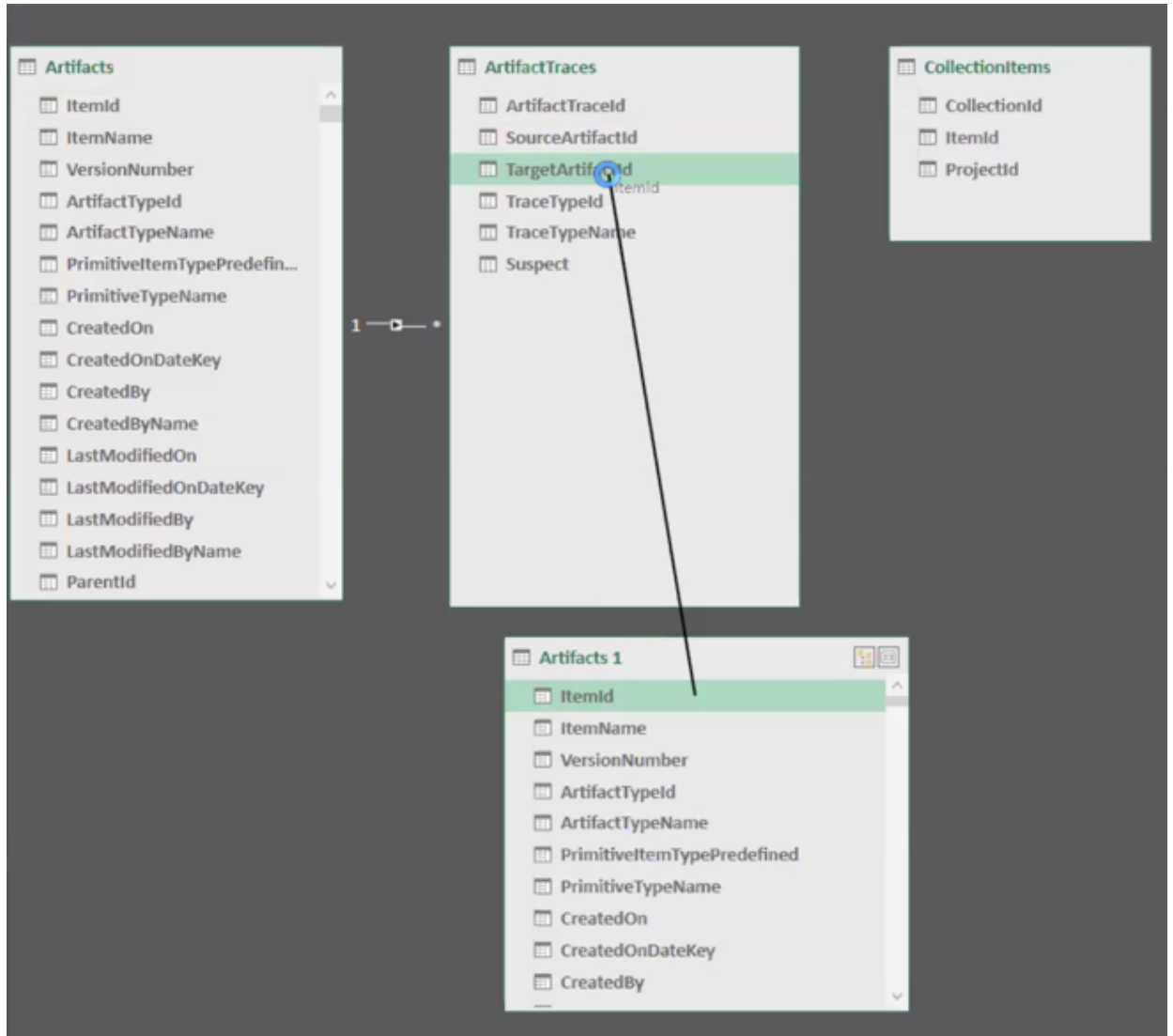
To perform this table join in PowerPivot:

- a. Click **Diagram View** in the Home ribbon
- b. Connect the ItemId from the Artifacts table (the source) to the SourceArtifactId in the ArtifactTraces table (the traces table).

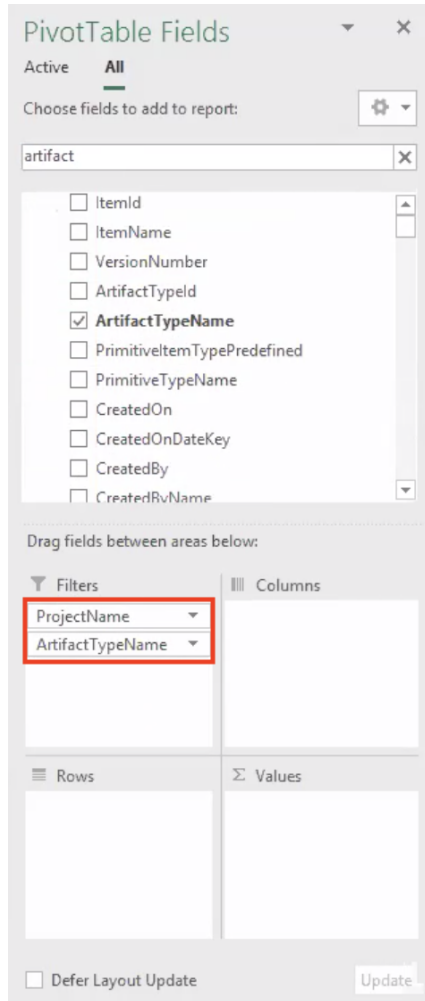


- c. Connect the ItemId from the Artifact1 table (the target table) to the TargetArtifactId in the ArtifactTraces table (the trace table).

This creates the connection between the source and target artifacts that reside within a trace relationship.



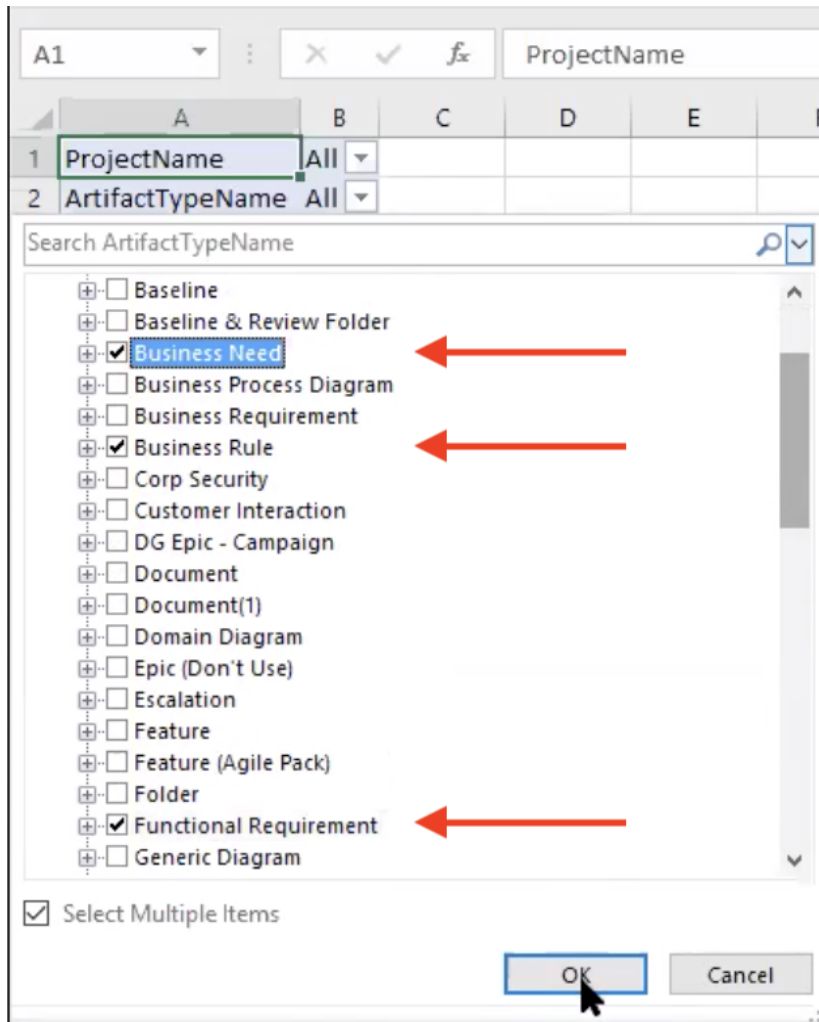
7. Create a pivot table in your spreadsheet. In Excel, click **Insert > Pivot Table**.
8. In the PivotTable fields side panel on the right, you have access to all the tables that you imported through Blueprint Analytics. Create filters to optimize the size of the matrix.  
In this example we filter based on ProjectName and ArtifactTypeName to display a limited set of artifact types within specific projects.



9. Further filters are needed to actually create the traceability matrix.

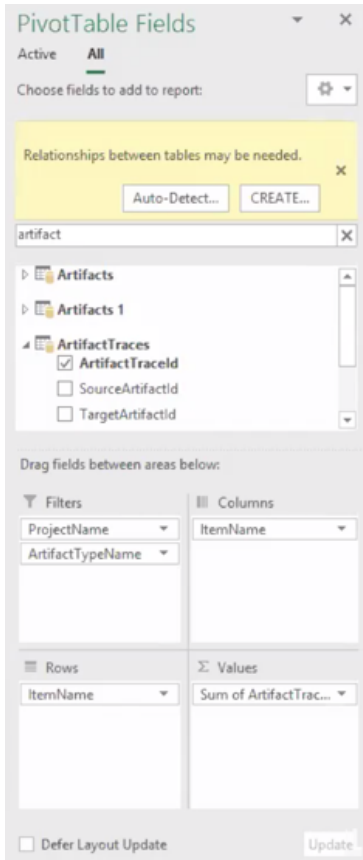
Because we want to create a traceability matrix on Functional Requirements linked to Business Rules, filter based on Business Rule, Functional Requirement, and Business Need.



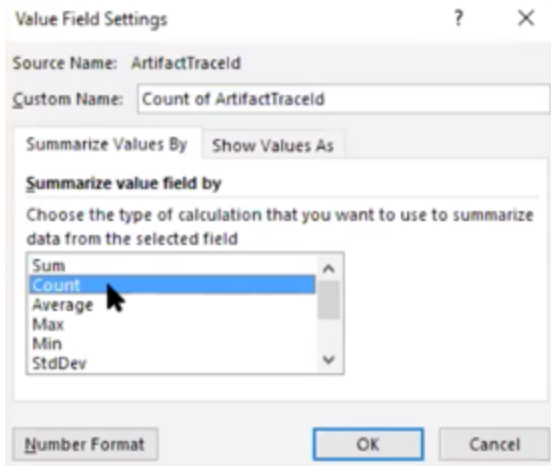


As all attributes are at your disposal, you can filter on anything you choose to create your own trace matrix. For example, you could filter by Artifact Name and Artifact Type to confirm that artifacts are traced to Non-Functional Requirements and Regulations.

10. In this example, we want to focus on the Artifact ID names, so we make the ItemName the source along the y-axis.
11. Create the target by plotting it along the x-axis. In this case, we take the ItemName from the Artifacts 1 table (the target table).
12. In the Values field, we define where we want to see traces between the artifacts.



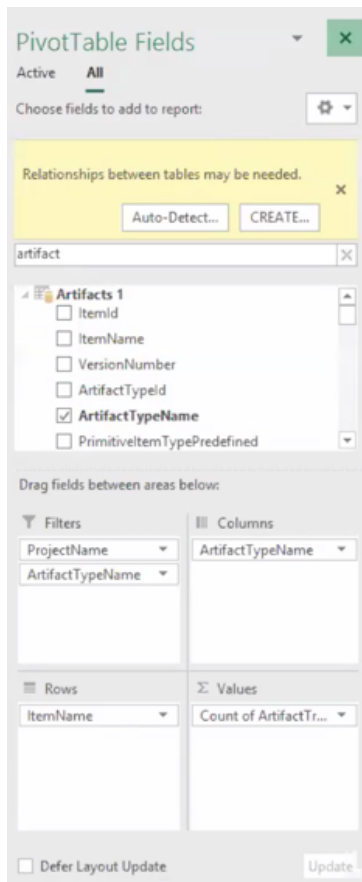
13. Instead of sum, change the Value Field Settings to Count by clicking **Value Field Settings** in the contextual menu.



14. Wherever a number is displayed in the table, a trace relationship exists between the source artifact on the y-axis and the target artifact on the x-axis.

	A	B	C	D	E
1	ProjectName	All			
2	ArtifactTypeName	(Multiple Items)			
3					
4	Count of ArtifactTraceId	Column Labels			
5	Row Labels	Airport Improvement Fee	Almonte Bank SOPs.doc	Applicant Agreement Screen	Apply at any time
6	Account Preference Options				
7	Airport Improvement Fee				
8	All systems will be secure				
9	Almonte Bank Promotion				
10	Application Process per Standard Procedures		1		
11	Applications Processed less than 2 days				
12	Applications Reviewed by Manager				
13	Apply in Person				
14	Apply Online			1	
15	Apply via mail				
16	Capture Contact Information				
17	Check Flight Status				
18	Credit Check Confirmation				1

15. You can add as many filters as you like to minimize, expand, and customize the information displayed. For example, you can filter on Property values and attributes to focus on artifacts that have a high risk or a high return if you have an attribute of that nature.



**Note:** If a number other than 1 is displayed in your trace matrix, this is because Blueprint Analytics lives at the artifact level and not at the sub-artifact level. All the traces that occur at the sub-artifact level roll up and are aggregated at the artifact level. For example, a business process artifact or visual process model might have traces within sub-artifacts rolling up and to the artifact, like four shapes in a business process model traced to one textual artifact.