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regoUniversity

Apptio • Targetprocess • Cloudability

Managing and Resolving TBM Model Complexity

Your Guides:

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Introductions

- Take 5 Minutes
- Turn to a person near you
- Introduce yourself
- Business cards

Agenda

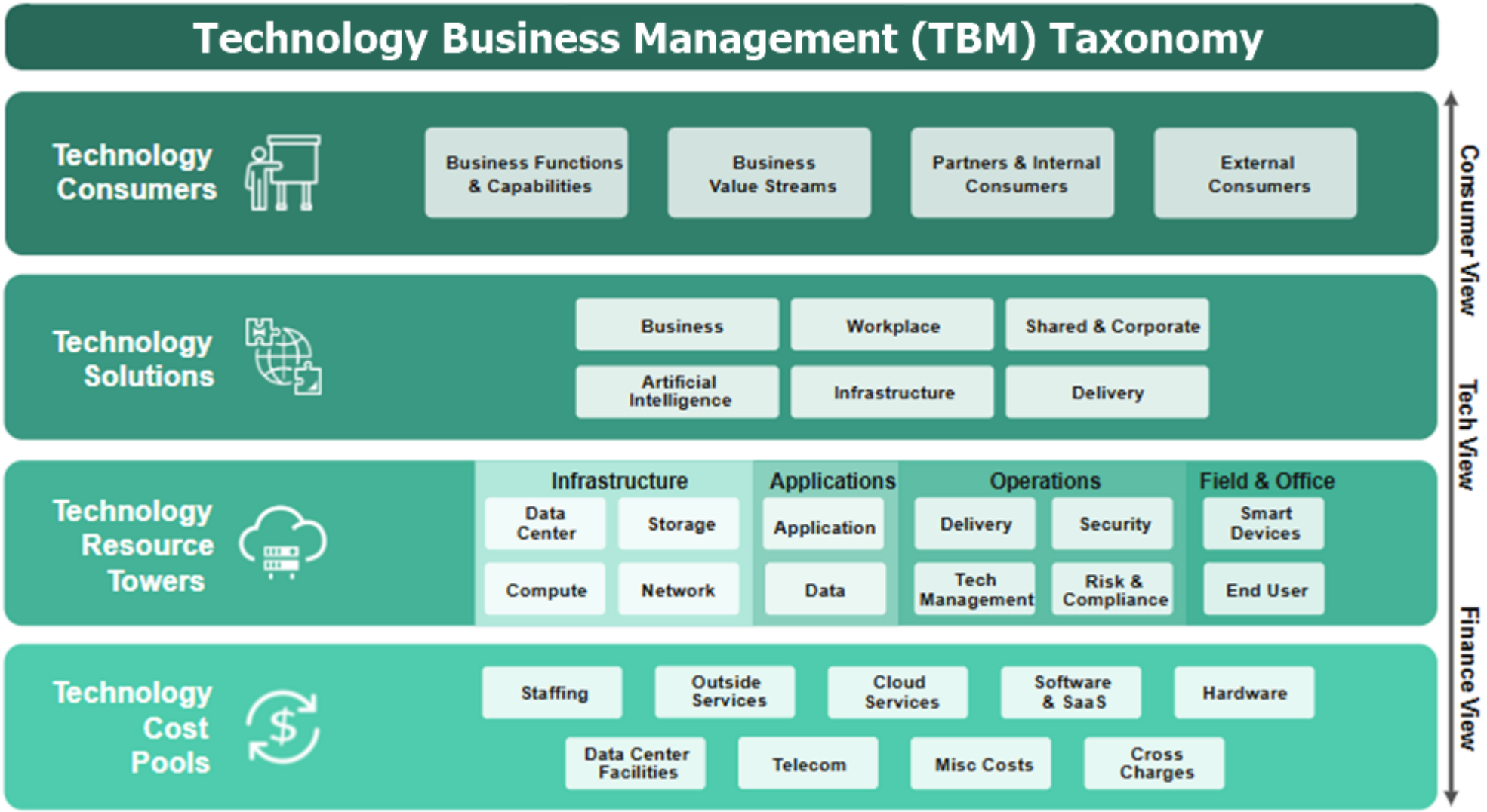
- Introduction
- Model complexity
- Challenges
- How to address complexity
- Configuration examples

Quick Poll

How many of you feel that your model is too complex, or have heard from users that they don't understand the model?

Where does the complexity exist within your model?

Where Does the Complexity Lie?



What Is Complex Architecture

- How do we end up with complex models when we have an Apptio TBM Unified Model (ATUM), backed by the TBM Council?
- Are we building in a vacuum?
- Did we miss requirements gathering or CIO vision?
- Are we too quick to start building?

What is Complex Architecture

Some examples:

- ✓ Leading Aerospace Manufacturer
  - 27-level nested IF statements
  - Artificially defining services at the GL level and tying expenses to them in the cost source
- ✓ Leading Banking Institution
  - Creating an ad hoc ERP system with multiple projects that included data transformation and inter-project data migrations via DataLink
- ✓ Leading Auto Manufacturer
  - Using Apptio to fix bad data through editable tables, ITP and 2 CT projects?
  - Not using Apptio to validate data between datasets, instead doing it manually

Why the Complexity?

- Unintentionally created over time
- Discovery: understanding of use cases
- Ignorance
- Data matures, but model stays the same
- Business requirements for defensibility
- Organizational alignment to the taxonomy

Open Discussion

Do you consider your cost model architecture to be complex?

Consider the following:

- How many modeled objects?
- How many table transforms?
- How many mapping tables?
- Any hard-coded formula values?
- Any multiple editable tables?
- Do you have 5+ allocation lines between the same 2 objects?
- What would you add to the list?

Inherent Challenges of a Complex Architecture

- Performance
- Troubleshooting
- Analysis
- Maintenance
- Documentation

Warning Signs

- Slow development environments or gray screens
- Increasing calculation times
- Long load times within development when viewing modeled metrics
- Concern over making changes due to fear of breaking the model
- Takes too much time to troubleshoot

Causes of Technical Debt

- ✓ Urgency of change
- ✓ Maturity of the model
- ✓ Unclear requirements
- ✓ Experience of developers

Questions to Ask

- Can we explain this part of the model to someone outside the TBM program?
- Do we have a method in Apptio to explain the complexity?
  - Service catalog
  - Service costing
  - Report notes or cost driver explanations
- Is this sustainable?
- Is the value of the change greater than the cost of maintaining?

Managing Complexity

- ✓ Audit your model
  - Data uploads
  - Data transformations
  - Allocations
- ✓ Establish a change management process for model updates
- ✓ Update documentation

Project Performance and Health

Typically, we see one of the following reasons for why project performance can degrade:

- ✓ Large number of open time periods
- ✓ Legacy models with new configuration has been layered on over time

Common Technical Health Assessment Findings

- Missing object identifiers
- Inefficient object identifiers
- Modeled object transform tables
- Mixed use of LookupEx, Tablematch, SplitEx formulas
- Large open time periods
- Many rows allocating small dollars
- Nested formulas

Environment and Node Overview

Terminology primer:

- **Environment** – A discrete grouping in Frontdoor that is specific to a client

You can have more than one Frontdoor environment

- **Domain** - The specific name of the client infrastructure container

Usually in the format: <company name>.apptio.com

- **Project** – A subset of domain, the list of specific configured projects in a given customer domain

- **Studio** – Configuration Studio (TBM Studio) environment for making and committing project changes

Data Relationships

Apptio is a data relationship modeling environment at its core.

- Creating the most efficient data relationships often has the biggest impact on model performance.

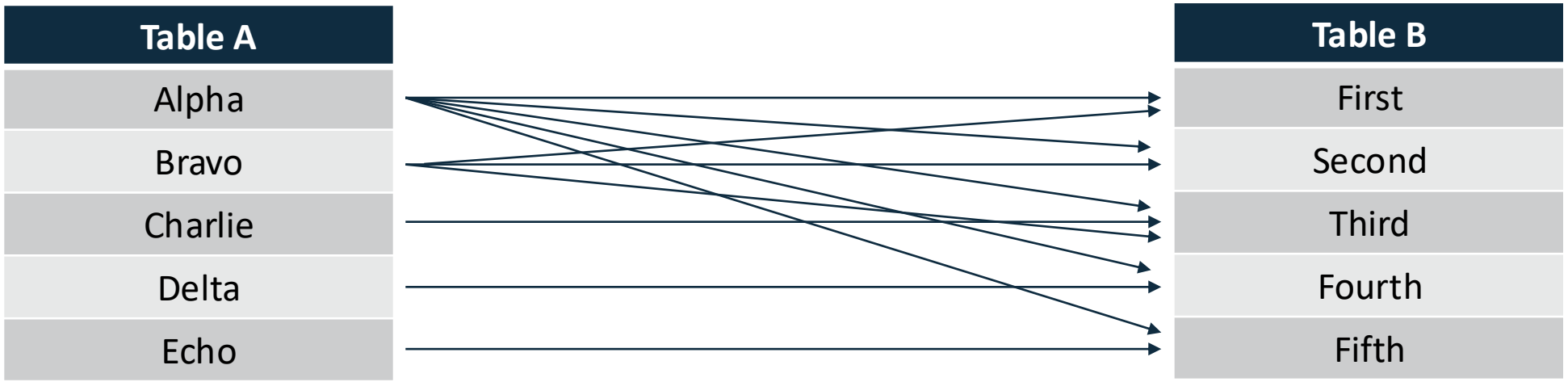
In this example, we have 1:1 cardinality between our data sets. This results in only calculating one path for each element of Table A or 5 total paths for the allocation rule.

Data Relationships

Apptio is a data relationship modeling environment at its core.

- Creating the most efficient data relationships often has the biggest impact on model performance.

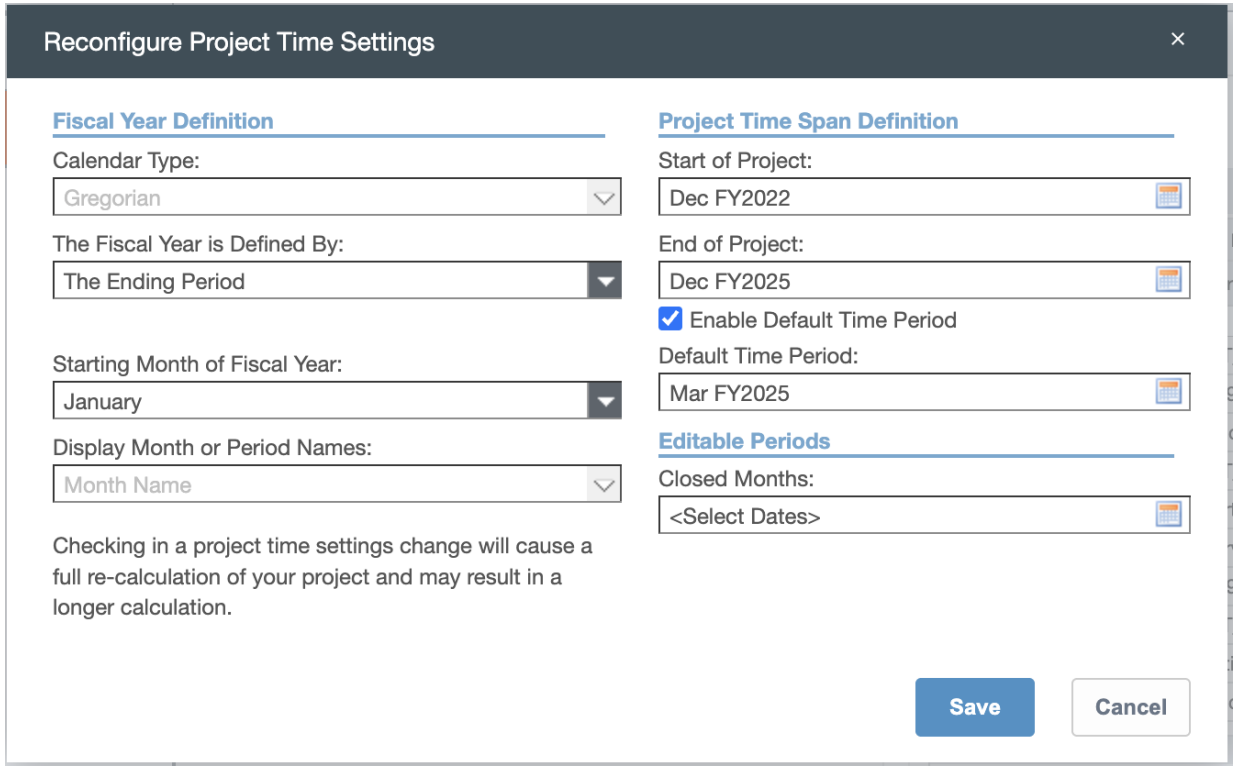
In this example, we have 1:Many cardinality between our data sets. This results in calculating multiple paths for each element of Table A, multiplying the starting rows from A to the ending rows.



Project Time Settings

Project Time Settings control the time periods that are calculated in each project.

Recommendation: keep no more than 3 years open for a given project.

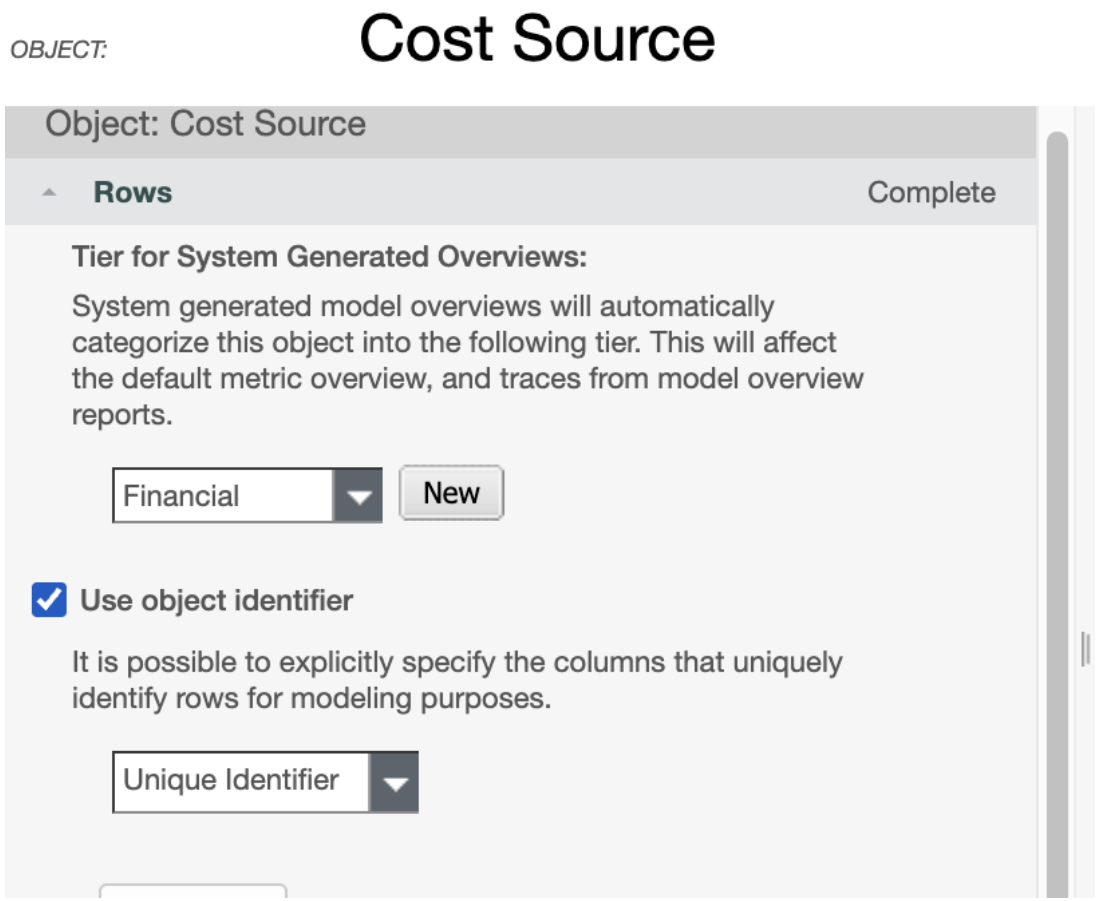


Object Identifiers

The foundation of every model is the objects it contains, and the granularity (or "level of detail") they run at.

By default, objects run at an automatic unique granularity.

As the underlying row counts increase, your performance may decrease, and objects over 10,000 rows will begin to experience noticeable performance degradation.



Object Identifiers

Defining your **Object Identifiers** can help with project calculation times and real time model performance. An object Identifier only needs to contain what is going to be used from that object. This is anything you are:

- ✓ Trending By
- ✓ Allocating By
- ✓ Slicing By
- ✓ Pivoting On
- ✓ Grouping By
- ✓ Reporting On

Pipeline Step Optimization

When considering the steps in a pipeline, do your best to limit row count or column count *before* you perform formula operations. This will help make the pipeline as efficient as possible.

Therefore, try to have the following types of pipeline steps *before* any formula steps. If you need a formula to make any of these work, do just the formulas you *need* before these step types, and then do other formulas later in the pipeline *after* these step types:

- Hide and Rename
- Filter
- Date Partition
- Group

Pipeline Step Optimization

Hide unnecessary columns

- If you have a table with a very large number of columns, but you are only using a subset of those columns, hide the columns you do not need.
    - This is especially relevant with data from 3rd party systems or JSON data that may expand to have hundreds or thousands of columns.

Avoid complex nesting of if() statements

- Nesting if() statements can become inefficient as complexity increases. If you are nesting more than two if() statements, or if you are using other functions like Lookup() inside of the if statement , consider using TableMatch. It is more efficient, and after you become familiar with it, it is easier to understand than nested if() statements.

Pipeline Step Optimization

Don't duplicate formulas unnecessarily

- Sometimes, when multiple users work on tables, you can get unnecessary duplication of formulas. For example, you might discover something like this in two different formula steps for a table, or even in the same formula step:

  - ```
    Column B =Lookup(Column A,Other Table,Column A,Column B)
    Column C =Lookup(Column A,Other Table,Column A,Column B)&&"Other Stuff"
    ```

  In this case, the system performs twice as many lookups to the "Other Table" as it needs to.

  The following is better:

  - ```
    Column B =Lookup(Column A,Other Table,Column A,Column B)
    Column C =Column B&&"Other Stuff"
    ```

Performance Review Component

The **Performance Review** component is an in-application utility that creates reports that an Apptio TBM Studio Administrator can use to gain insight into the impact their current project configuration has on application **performance**.

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