



Technical Reference (excerpt)

Credit Operations and Partner Sales semantic model

How the Power BI model behind the Operations Workflow Dashboard and the Referral Partner Sales Dashboard is built, so Larkspur's IT staff can maintain it after handover.

Sample data. All names, organizations, and figures are fictional.

1. Purpose and scope

One semantic model serves two reports. The Operations Workflow Dashboard is used by the credit manager to watch volume, turn time, document requests, decisions, and reversals. The Referral Partner Sales Dashboard is used by the sales manager and the ten partner sales reps to track submissions, funding conversion, and the health of each referral partner. This excerpt covers the data model, tables, relationships, calculated objects, the main measures, and refresh notes. The full reference also lists every visual by page and the row-level security plan.

2. Data model

Applications is the central fact table, with one row per financing application. Workflow Actions and Document Requests hold the steps and document requests for each application and are filtered through Applications, so any slicer that affects applications also affects them. Rep filters reach applications through Partners, because each partner is covered by one rep.

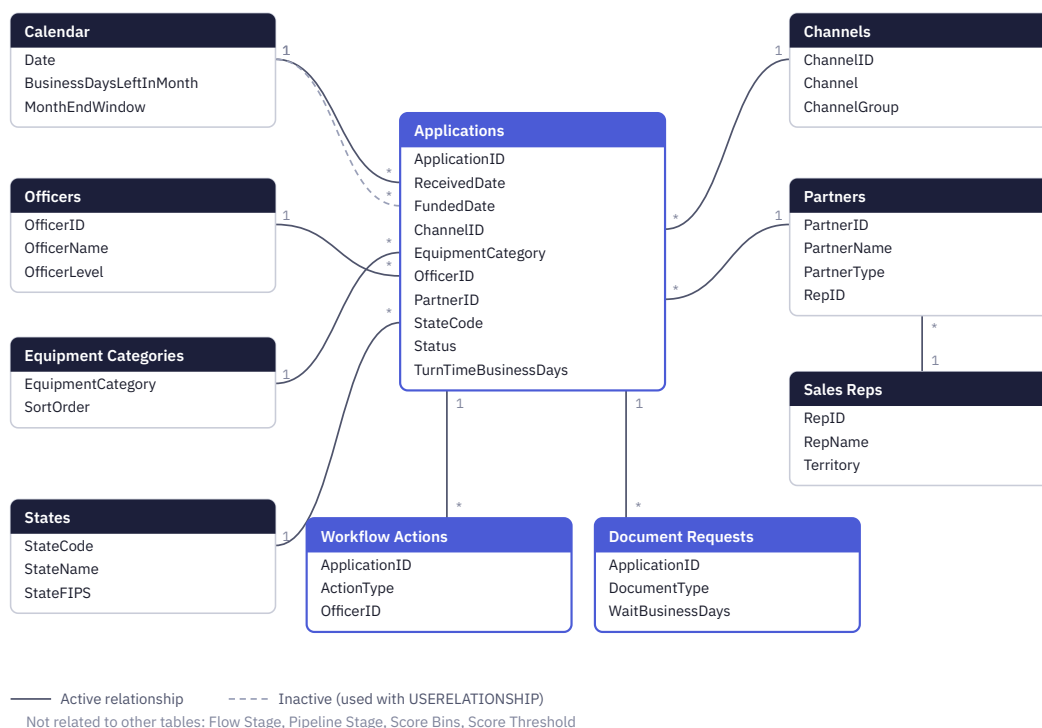


Figure 1. Model view. Only key columns are shown. Each line runs from the many side (*) to the one side (1).

One relationship is inactive on purpose. FundedDate lets funded measures count deals by the month they funded, while everything else counts by the month received. The Calendar table comes from the source rather than from DAX, because it carries the company's holidays and the number of business days left in each month, which the month-end turn time measures depend on.

3. Tables

Table	Type	Rows	Grain	Key	Source
Applications	Fact	5,973	One row per financing application	ApplicationID	Applications sheet of the export
Workflow Actions	Fact	47,276	One row per workflow step on an application	ActionID	Workflow Actions sheet
Document Requests	Fact	9,625	One row per document requested from an applicant	RequestID	Document Requests sheet
Officers	Dimension	13	One row per credit officer	OfficerID	Officers sheet
Channels	Dimension	5	One row per application source	ChannelID	Channels sheet
Equipment Categories	Dimension	7	One row per equipment category	EquipmentCategory	Equipment Categories sheet
Partners	Dimension	404	One row per referral partner	PartnerID	Partners sheet
Sales Reps	Dimension	10	One row per partner sales rep	RepID	Sales Reps sheet
States	Dimension	18	One row per state served	StateCode	States sheet
Calendar	Dimension	640	One row per day, with business-day flags and business days left in the month	Date	Calendar sheet
Flow Stage	Calculated	6	Steps for the application flow funnel	Stage	DAX calculated table
Pipeline Stage	Calculated	5	Steps for the partner pipeline funnel	Stage	DAX calculated table
Score Bins	Calculated	20	Five-point bins for the health score chart	Bin	DAX calculated table
Score Threshold	Parameter	4	Threshold values for the partner health list (35 to 70)	Score Threshold	DAX calculated table

4. Relationships

From (many side)	To (one side)	Active	Purpose
Applications[ReceivedDate]	Calendar[Date]	Active	Filters by the date the application was received
Applications[FundedDate]	Calendar[Date]	Inactive	Used by funded measures through USERELATIONSHIP

From (many side)	To (one side)	Active	Purpose
Applications[ChannelID]	Channels[ChannelID]	Active	
Applications[EquipmentCategory]	'Equipment Categories'[EquipmentCategory]	Active	
Applications[OfficerID]	Officers[OfficerID]	Active	The credit officer assigned to the application
Applications[PartnerID]	Partners[PartnerID]	Active	Blank for direct and marketplace applications
Partners[RepID]	'Sales Reps'[RepID]	Active	Rep filters reach applications through Partners
Applications[StateCode]	States[StateCode]	Active	Location of the borrowing business
'Workflow Actions'[ApplicationID]	Applications[ApplicationID]	Active	Actions inherit every application filter
'Document Requests'[ApplicationID]	Applications[ApplicationID]	Active	Requests inherit every application filter

Every relationship is many-to-one with a single cross-filter direction. No relationship is bidirectional, which keeps filter paths predictable.

5. Calculated tables and columns

The two stage tables drive the funnel visuals, Score Bins drives the health score chart, and Score Threshold feeds the partner list slicer. The calculated column below finds how many business days were left in the month when an application's file became complete.

```
File Complete Days Left =
LOOKUPVALUE ( Calendar[BusinessDaysLeftInMonth], Calendar[Date], Applications[File Complete Date] )
```

Calculated column	Purpose
Applications[File Complete Date]	Date the last requested document arrived
Applications[File Complete Days Left]	Business days left in the month when the file was complete
Applications[File Complete Window]	Month-end window flag used on the Turn time page
Applications[Days Left Bucket]	Axis for the decision wait chart, sorted by Days Left Sort
Applications[Days Left Sort]	Sort column for Days Left Bucket
Applications[Exit Point]	Where applications that did not fund left the process
Applications[Outcome Group]	Outcome group for the sales pages
Channels[Channel Comparison]	Legend for the conversion trend line
Equipment Categories[Category Comparison]	Legend for the document wait trend line

6. Measure catalog

The model holds 76 measures in a table named `_Measures`, grouped into display folders. The 20 below carry most of the logic; the rest are ratios or variations built from them. Turn time and waits are stored in business days, so the measures do not convert units.

Applications

Core, whole number

Count of applications in the current filter context.

```
COUNTROWS ( Applications )
```

Approval Rate

Core, percentage, 1 decimal

Approved share of decided applications.

```
DIVIDE ( [Approved Applications], [Decided Applications] )
```

Funding Conversion

Core, percentage, 1 decimal

Share of applications received that went on to fund.

```
DIVIDE ( [Funded Applications], [Applications] )
```

Funded Volume

Core, currency, no decimals

Dollars funded in the selected months, by funding date.

```
CALCULATE (
    SUM ( Applications[FundedAmount] ),
    USERELATIONSHIP ( Calendar[Date],
        Applications[FundedDate] )
)
```

Median Turn Time

Turn Time, decimal, 1 place

Median business days from receipt to the credit decision. MEDIAN skips undecided applications because their value is blank.

```
MEDIAN ( Applications[TurnTimeBusinessDays] )
```

Month-End Decision Wait

Turn Time, decimal, 1 place

Median decision wait for files completed in the last three business days of a month.

```
CALCULATE (
    [Median Decision Wait],
    Applications[File Complete Window] = "Last 3 business days"
)
```

Median Document Wait

Documents, decimal, 1 place

Median business days from a request to receipt of the document. Outstanding requests are blank and skipped.

```
MEDIAN ( 'Document Requests'[WaitBusinessDays] )
```

Approvals Reversed

Reversals, whole number

Approvals reversed before funding.

```
CALCULATE ( [Applications], Applications[Status] = "Reversed" )
```

Reversal Rate

Reversals, percentage, 1 decimal

Share of approvals that were later reversed.

```
DIVIDE ( [Approvals Reversed], [Approved Applications] )
```

Highest Reversal Officer

Reversals, text

Officer with the highest reversal rate among officers with at least 60 approvals.

```
VAR t =
    TOPN (
        1,
        FILTER ( ALL ( Officers[OfficerName] ),
            [Approved Applications] >= 60 ),
            [Reversal Rate]
        )
    RETURN
        MAXX ( t, Officers[OfficerName] )
```

Same Level Average Decisions

Comparisons, whole number

Average decisions per officer at the selected officer's level.

```
VAR lv1 = SELECTEDVALUE ( Officers[OfficerLevel] )
RETURN
    AVERAGEX ( FILTER ( ALL ( Officers ),
        Officers[OfficerLevel] = lv1 ), [Decided Applications] )
```

Flow Count

Application Flow, whole number

Value for each step of the funnel. Put 'Flow Stage'[Stage] on Category and this measure on Values.

```
SWITCH (
    SELECTEDVALUE ( 'Flow Stage'[Stage] ),
    "Received", [Applications],
    "Decided", [Decided Applications],
    "Approved", [Approved Applications],
    "Contract sent", [Contracts Sent],
    "Contract signed", [Contracts Signed],
    "Funded", [Funded Applications]
)
```

Contracts Out Not Signed

Partner Sales, currency, no decimals

Requested amount on approved deals with a contract out and no signature yet.

```
VAR sentApps =  
    CALCULATETABLE (  
        VALUES ( 'Workflow Actions'[ApplicationID] ),  
        'Workflow Actions'[ActionType] = "Contract  
sent",  
        REMOVEFILTERS ( Calendar )  
    )  
RETURN  
    CALCULATE (  
        SUM ( Applications[RequestedAmount] ),  
        REMOVEFILTERS ( Calendar ),  
        TREATAS ( sentApps, Applications[ApplicationID]  
    ),  
        Applications[ContractSigned] = "No",  
        Applications[Status] = "In progress"  
    )
```

Activity Points

Partner Health, decimal, 0 places

Up to 40 points for keeping the usual pace.

```
VAR u = [Usual Pace]  
VAR r = [Recent Pace]  
VAR ratio = IF ( u > 0, DIVIDE ( r, u ), IF ( r > 0, 1,  
0 ) )  
RETURN  
    40 * MIN ( 1, ratio )
```

Conversion Points

Partner Health, decimal, 0 places

Up to 30 points. A 60% funding conversion earns all 30.

```
30 * MIN ( 1, [Conversion 12 Months] / 0.6 )
```

Recency Points

Partner Health, decimal, 0 places

Up to 20 points, falling to zero at 90 days without a submission.

```
VAR ds = [Days Since Last Submission]  
RETURN  
    SWITCH ( TRUE (), ds <= 14, 20, ds >= 90, 0, 20 * (  
90 - ds ) / 76 )
```

Is Scored

Partner Health, whole number

1 when a partner has at least six months of history and three submissions in the last year.

```
VAR asOf = [As Of Date]  
VAR onb = SELECTEDVALUE ( Partners[OnboardDate] )  
VAR n12 =  
    CALCULATE ( [Applications], REMOVEFILTERS ( Calendar  
) , Applications[ReceivedDate] > asOf - 365 )  
RETURN  
    IF ( onb <= asOf - 180 && n12 >= 3, 1, 0 )
```

Health Score

Partner Health, whole number

Partner health score from 0 to 100. Blank for partners without enough history.

```
IF (  
    [Is Scored] = 1,  
    ROUND ( [Activity Points] + [Conversion Points] +  
[Recency Points] + [Approval Points], 0 )  
)
```

Health Band

Partner Health, text

At risk under 45, Watch from 45 to 69, Healthy at 70 and up.

```
VAR s = [Health Score]  
RETURN  
    IF ( ISBLANK ( s ), BLANK (), IF ( s < 45, "At  
risk", IF ( s < 70, "Watch", "Healthy" ) ) )
```

Main Issue

Partner Health, text

The score part with the biggest shortfall, written as a short phrase for the list and the outreach sheet.

```
VAR ga = 40 - [Activity Points]  
VAR gc = 30 - [Conversion Points]  
VAR gr = 20 - [Recency Points]  
VAR gp = 10 - [Approval Points]  
VAR mx = MAX ( MAX ( ga, gc ), MAX ( gr, gp ) )  
VAR u = [Usual Pace]  
RETURN  
    SWITCH (  
        TRUE (),  
        mx <= 0.5, "No weak area",  
        mx = ga,  
            IF ( [Recent Pace] = 0, "No submissions in  
90 days",  
                "Activity down " & FORMAT ( 1 - DIVIDE (  
[Recent Pace], u ), "0%" ) ),  
        mx = gc, "Funding conversion " & FORMAT (  
[Conversion 12 Months], "0%" ),  
        mx = gr, "Last submission " & [Days Since Last  
Submission] & " days ago",  
        "Approval rate " & FORMAT ( [Approval 12  
Months], "0%" )  
    )
```

7. Refresh notes

- **Source.** One Excel workbook, Larkspur Data Tables.xlsx, produced by the loan origination system's nightly export and saved to the Reporting folder of the Credit Operations SharePoint site. Each of the ten tables is an Excel table,

and Power Query reads the tables rather than the sheets so extra rows or notes on a sheet do not load.

- **Schedule.** The semantic model refreshes daily at 6:30 AM Eastern, after the export lands at about 5:00 AM. Because the workbook lives in SharePoint Online, Power BI connects to it directly and no on-premises data gateway is needed.
- **Credentials.** The data source uses an organizational account owned by the reporting service account, not a person, so refresh keeps working when staff change.
- **Column protection.** Each query keeps only the expected columns with `Table.SelectColumns` and `MissingField.UseNull`, so a dropped column loads as empty instead of failing the refresh. The Data Refresh Guide covers what to do next.
- **Business days.** Turn time, decision wait, and document wait arrive already calculated in business days (8:00 AM to 6:00 PM, Monday through Friday, excluding company holidays). The model does not recalculate them, so a change to the holiday calendar belongs in the export and its Calendar sheet.
- **As-of date.** The partner health measures count back from the latest application date in the data, not from today's date, so scores stay correct even if a refresh is missed for a day.
- **Checks.** After each refresh, the About sheet of the workbook lists row counts and totals that should match the report with all slicers cleared (5,973 applications, 47,276 workflow actions, and 9,625 document requests in this sample).