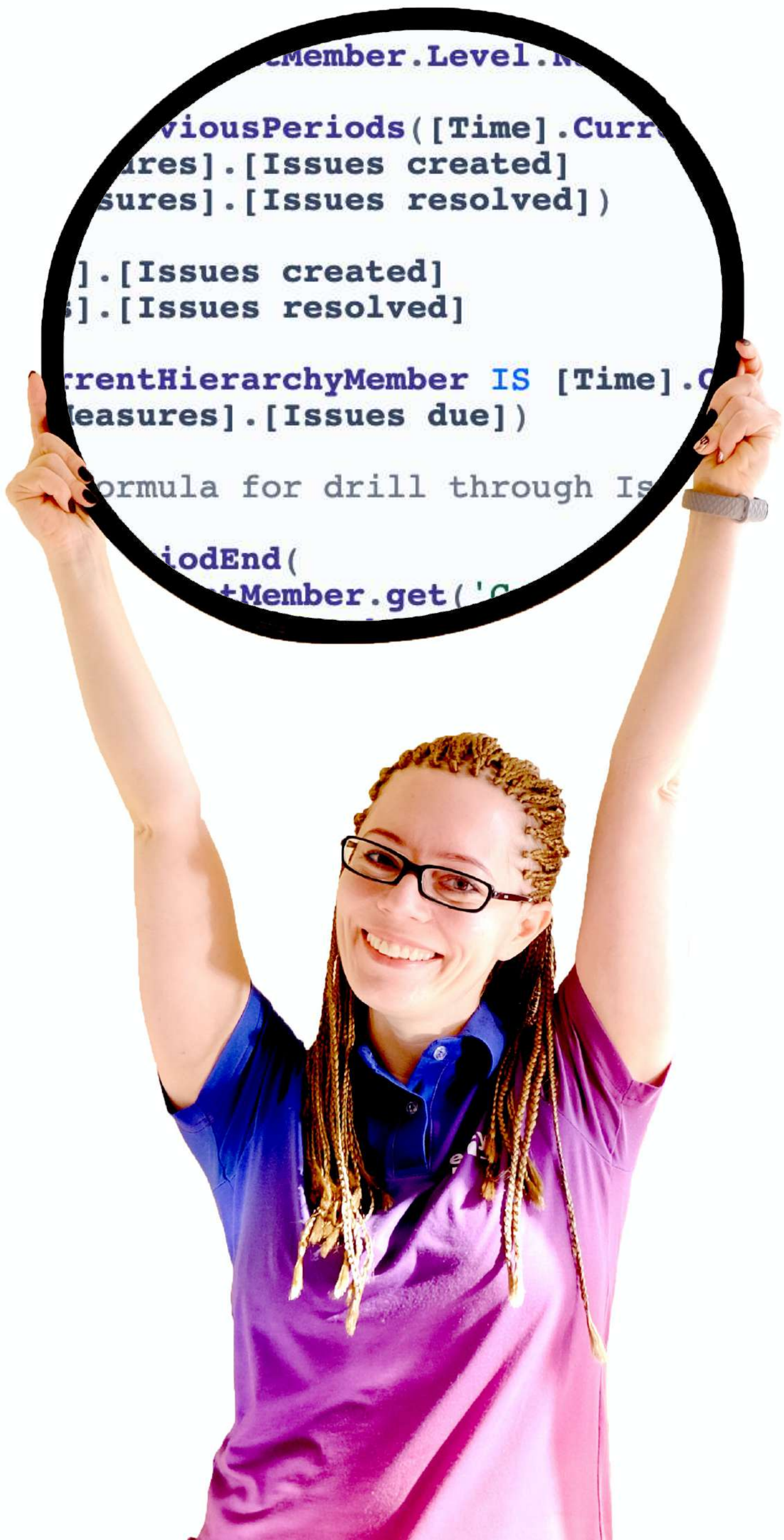# eazyBI

Journeying with an MDX

Lauma Cīrule
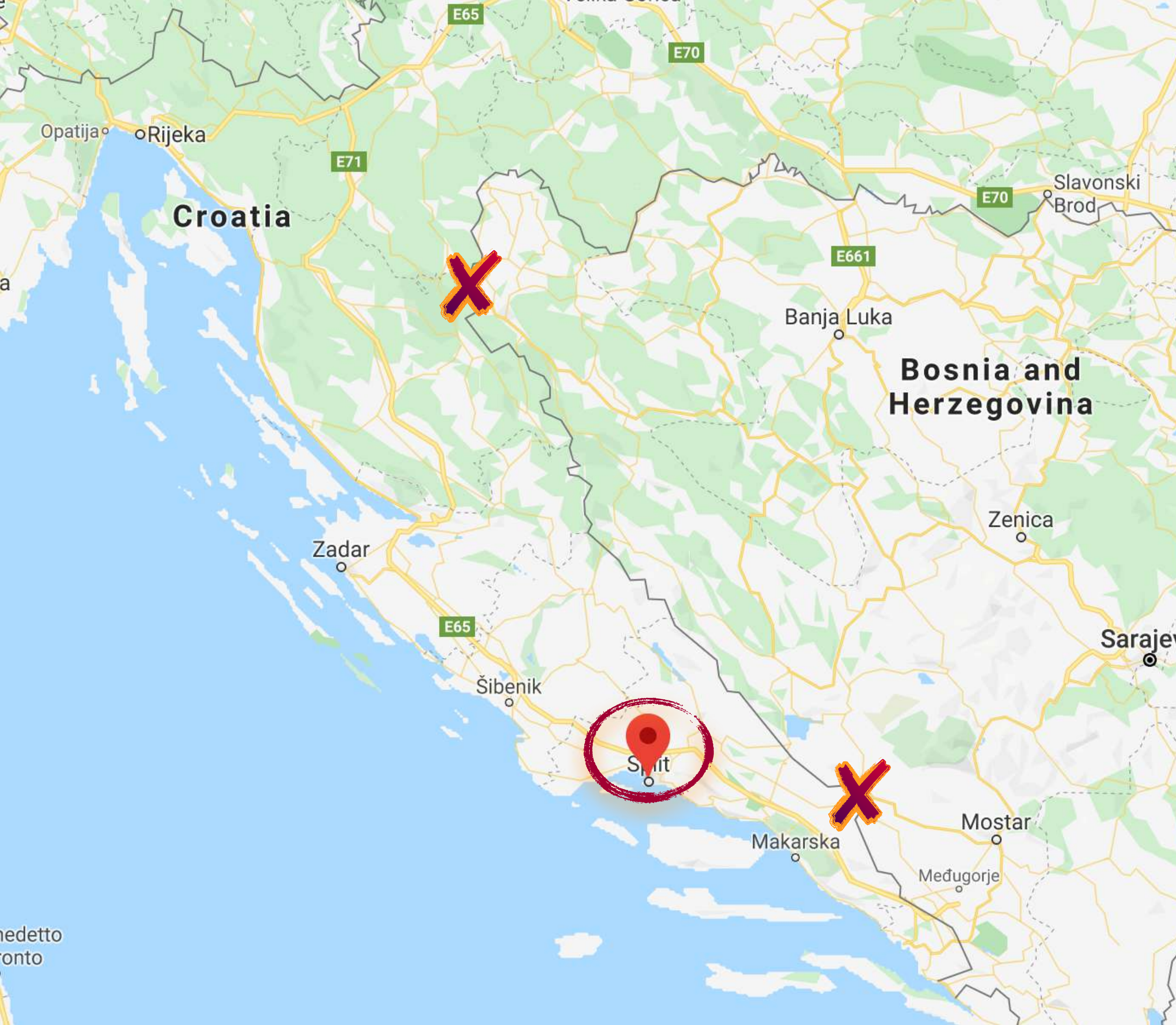
Lauma Cīrule

eazyBI

Community Day
May 14, 2020

MDX building
blocks

Functions
for MDX testing
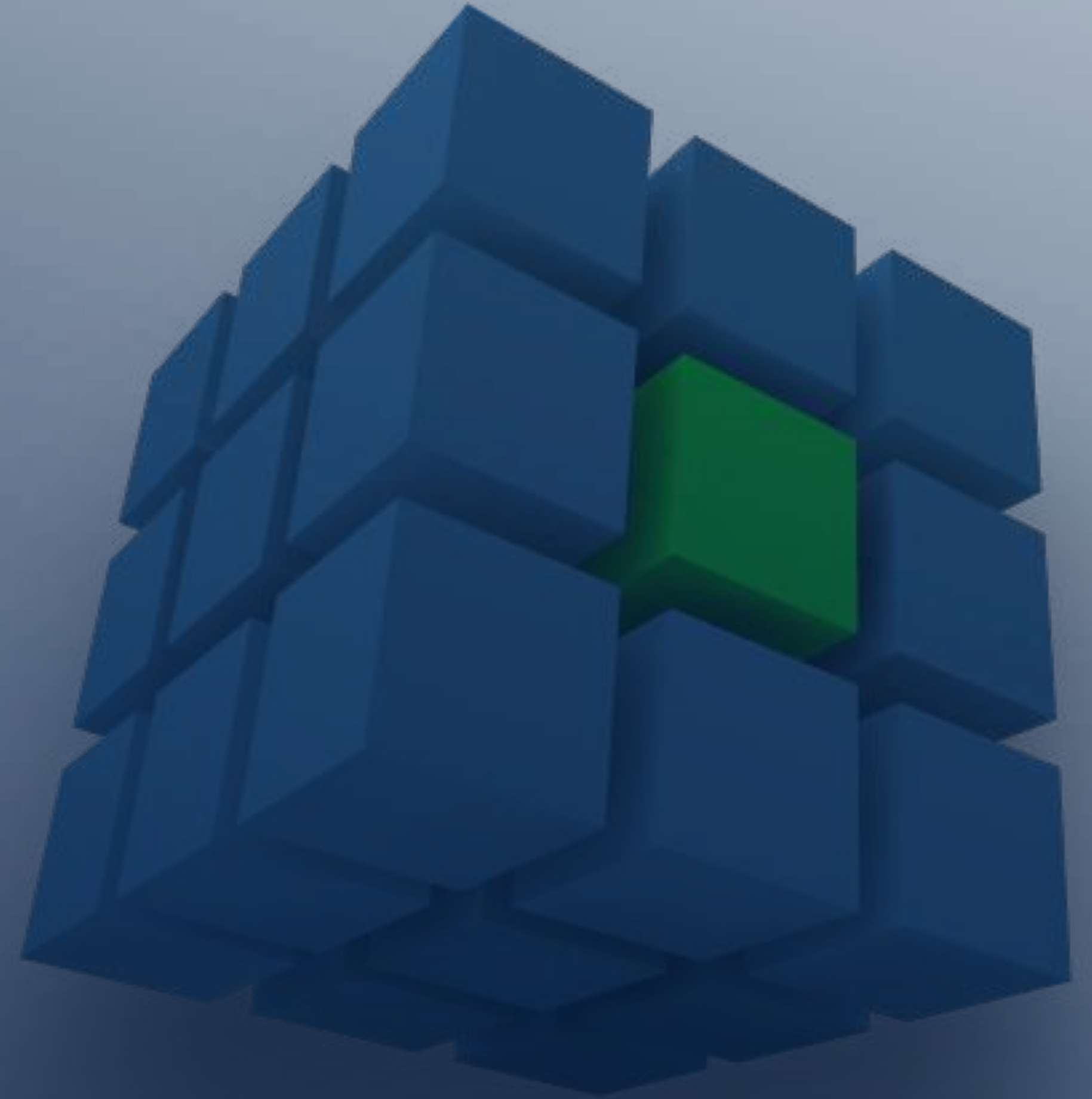
Steps to test
calculation

Making the wrong turn...

... this is my story :)

(What is yours?)

Get familiar with the data cube

MDX building blocks

DIMENSIONS, MEASURES & PROPERTIES

Pages

> Issue Type

Columns | Measures | > Time

Rows | Nonempty

∨ Issue

> Select individual members

∨ All hierarchy level members

Select all members at level
Project 3 | Issue 824

Sub-task
Project 3 | Parent 611
Sub-task 825

Epic
Project 3 | Epic 44 | Parent 614
Sub-task 827

Epics without project
Epic 42 | Parent 612
Sub-task 825

> Drill into or expand

Pages

Table Bar Line Pie Scatter Timeline Map Gantt Gauge

Hide empty columns ∨ | Issues created, Last 3 months > 0 | All others | Total ∨

Story ∨

	Issues created			Story Points created		Issue Story Points	Issue created date	Issue type
	−Last 3 months	+Mar 2020	+Apr 2020	−Last 3 months	+Mar 2020			
−DA	12	10	2	18.00	18.00			
DA-255	1	1		3.00	3.00	3.00	Mar 05 2020	Story
DA-256	1	1					Mar 07 2020	Story
DA-257	1	1					Mar 08 2020	Story
DA-258	1	1		2.00	2.00	2.00	Mar 10 2020	Story
DA-259	1	1		6.00	6.00	6.00	Mar 11 2020	Story
DA-264	1	1		3.00	3.00	3.00	Mar 18 2020	Story
DA-266	1	1					Mar 21 2020	Story
DA-267	1	1					Mar 22 2020	Story
DA-270	1	1		4.00	4.00	4.00	Mar 26 2020	Story
DA-271	1	1					Mar 28 2020	Story
DA-274	1		1				Apr 01 2020	Story
DA-278	1		1				Apr 07 2020	Story
+DB	12	10	2	10.00	10.00			
+DG	7	6	1	7.00	7.00			

Writing MDX: basic rules

combine carefully

know syntax

use correct data types

Use existing measures, dimension members
… and functions to create the new measure.

Use examples
… of measures and reports from demo account and community.

Start simple
… and add complexity gradually

Writing MDX: basic rules

combine carefully

know syntax

use correct data types

Syntax

```
Sum( Set_Expression , Numeric_Expression )
```

Arguments

Set_Expression	MDX expression that returns a set.
Numeric_Expression	MDX expression that returns a number.

Use correct data (expression) type for function arguments

Know the output of the function

Writing MDX: basic rules

combine carefully

know syntax

use correct data types

Time member	Set	Date	String	Number	Boolean
+ 2019	{[Time].[2019].[Q1 2019], [Time].[2019].[Q2 2019], [Time].[2019].[Q3 2019], [Time].[2019].[Q4 2019]}	Jan 01 2019	2019	365.00	false
+ 2020	{[Time].[2020].[Q1 2020], [Time].[2020].[Q2 2020], [Time].[2020].[Q3 2020], [Time].[2020].[Q4 2020]}	Jan 01 2020	2020	366.00	true

Functions for MDX testing

MDX debug functions

SetToStr()

TupleToStr()

.AllProperties

```
SetToStr(

Filter( Descendants(

    [Affects Version].CurrentHierarchyMember,

    [Affects Version].[Version]),

  NOT IsEmpty(

    [Affects Version].CurrentHierarchyMember

      .get("Release date"))

))
```


Affects Version Project	SetToStr
+ DEMO Alfa	{[Affects Version].[DEMO Alfa].[Released].[1.0] [Affects Version].[DEMO Alfa].[Released].[2.0], [Affects Version].[DEMO Alfa].[Released].[3.0], [Affects Version].[DEMO Alfa].[Released].[4.0], [Affects Version].[DEMO Alfa].[Unreleased].[5.0], [Affects Version].[DEMO Alfa].[Unreleased].[6.0]}
+ DEMO Beta	{[Affects Version].[DEMO Beta].[Released].[1.0] [Affects Version].[DEMO Beta].[Released].[2.0], [Affects Version].[DEMO Beta].[Released].[3.0], [Affects Version].[DEMO Beta].[Released].[4.0], [Affects Version].[DEMO Beta].[Unreleased].[5.0], [Affects Version].[DEMO Beta].[Unreleased].[6.0]}

MDX debug functions

SetToStr()

TupleToStr()

.AllProperties

```
TupleToStr((

    [Measures].[Open issues],

    [Time].CurrentHierarchy.

        Levels("Day").DateMember(

            [Affects Version].

                CurrentHierarchyMember.get(

                    "Release date"))

))
```

Affects Version	TupleToStr	Version release date
6.0	([Measures].[Open issues], [Time].[2020].[Q1 2020].[Feb 2020].[Feb 25 2020])	Feb 25 2020
7.0	([Measures].[Open issues], [Time].[2020].[Q2 2020].[Apr 2020].[Apr 25 2020])	Apr 25 2020
8.0	([Measures].[Open issues], [Time].[2020].[Q2 2020].[Jun 2020].[Jun 25 2020])	Jun 25 2020

MDX debug functions

SetToStr()

TupleToStr()

.AllProperties

`[Affects Version].CurrentMember.AllProperties`

Affects Version		AllProperties
─ DEMO Alfa		KEY: DA DISPLAY_KEY: DA
─ (no version)	(no version)	KEY: (no version) URL_ID: -1 Start date: Release date: Status: (no version) Description:
─ Released	1.0	KEY: 1.0 URL_ID: 10200 Start date: 2019-01-26 Release date: 2019-04-26 Status: Released Description:
	2.0	KEY: 2.0 URL_ID: 10201 Start date: 2019-03-28 Release date: 2019-06-27 Status: Released Description: This will be major version

Steps to test calculation

STEPS TO TEST CALCULATION

Ingredients of the function

Define calculated member formula

Sum(<Set>,<NumericExpression>)

[Measures].[Created before release] =

```
1  Sum(
2  Filter(
3    Descendants([Affects Version].CurrentHierarchyMember,
4      [Affects Version].[Version]),
5    NOT IsEmpty([Affects Version].CurrentHierarchyMember.get("Release date"))
6  ),
7  CASE WHEN -- if version release date is in selected time period
8  DateInPeriod([Affects Version].CurrentHierarchyMember.get("Release date"),
9    [Time].CurrentHierarchyMember)
10 THEN
11   Sum( -- sum defects found from the start date of period until one day before release date
12     [Time].[Day].DateMembersBetween(
13       [Time].CurrentHierarchyMember.StartDate,
14       DateAddDays([Affects Version].CurrentHierarchyMember.get("Release date"), -1)
15     ), [Measures].[Issues created]
16   )
17 WHEN -- if version release is after the currently selected time period
18   DateAfterPeriodEnd(
19     [Affects Version].CurrentHierarchyMember.get("Release date"),
20     [Time].CurrentHierarchyMember)
21 THEN
22   Sum( -- sum all defects found in selected time period
23     [Time].[Day].DateMembersBetween(
24       [Time].CurrentHierarchyMember.StartDate,
25       [Time].CurrentHierarchyMember.NextStartDate),
26     [Measures].[Issues created]
27   )
28 END
29 )
30
```

Formatting   #,### Integer

Read calculated members tutorial to learn about calculated member formulas. You can select members, operators and frequently used functions from sidebar to insert them into calculated member formula.

STEPS TO TEST CALCULATION

Ingredients of the function

What is in the set?

Define calculated member formula

[Measures].[Created before release] =

```
 1  Sum(
 2  Filter(
 3      Descendants([Affects Version].CurrentHierarchyMember,
 4          [Affects Version].[Version]),
 5      NOT IsEmpty([Affects Version].CurrentHierarchyMember.get("Release date"))
 6  ),
 7  CASE WHEN -- if version release date is in selected time period
 8  DateInPeriod([Affects Version].CurrentHierarchyMember.get("Release date"),
 9      [Time].CurrentHierarchyMember)
10  THEN
11      Sum( -- sum defects found from the start date of period until one day before rele
12          [Time].[Day].DateMembersBetween(
13              [Time].CurrentHierarchyMember.StartDate,
14              DateAddDays([Affects Version].CurrentHierarchyMember.get("Release date"), -1)
15          ), [Measures].[Issues created]
16      )
17  WHEN -- if version release is after the currently selected time period
18      DateAfterPeriodEnd(
19          [Affects Version].CurrentHierarchyMember.get("Release date"),
20          [Time].CurrentHierarchyMember)
21  THEN
22      Sum( -- sum all defects found in selected time period
23          [Time].[Day].DateMembersBetween(
24              [Time].CurrentHierarchyMember.StartDate,
25              [Time].CurrentHierarchyMember.NextStartDate),
26          [Measures].[Issues created]
27      )
```

Formatting   #,### Integer   ⌄

Read calculated members tutorial to learn about calculated member formulas. You can select members, operators and frequently used functions from sidebar to insert them into calculated member formula.

Root members

Issues created   Issues due   Issues resolved

Issues closed   Issues with due date

Issues last updated   Original estimated hours

Remaining estimated hours

Issues created count   Issues due count

Issues resolved count   Issues closed count

Hours spent   Issues with hours spent

Sub-tasks created   Sub-tasks due

Sub-tasks resolved   Sub-tasks closed

Transitions to status   Transitions from status

Days in transition status

Workdays in transition status

Remaining estimated hours change

Transitions to status issues count

Transitions from status issues count

Story Points created   Story Points due

Story Points resolved   Story Points closed
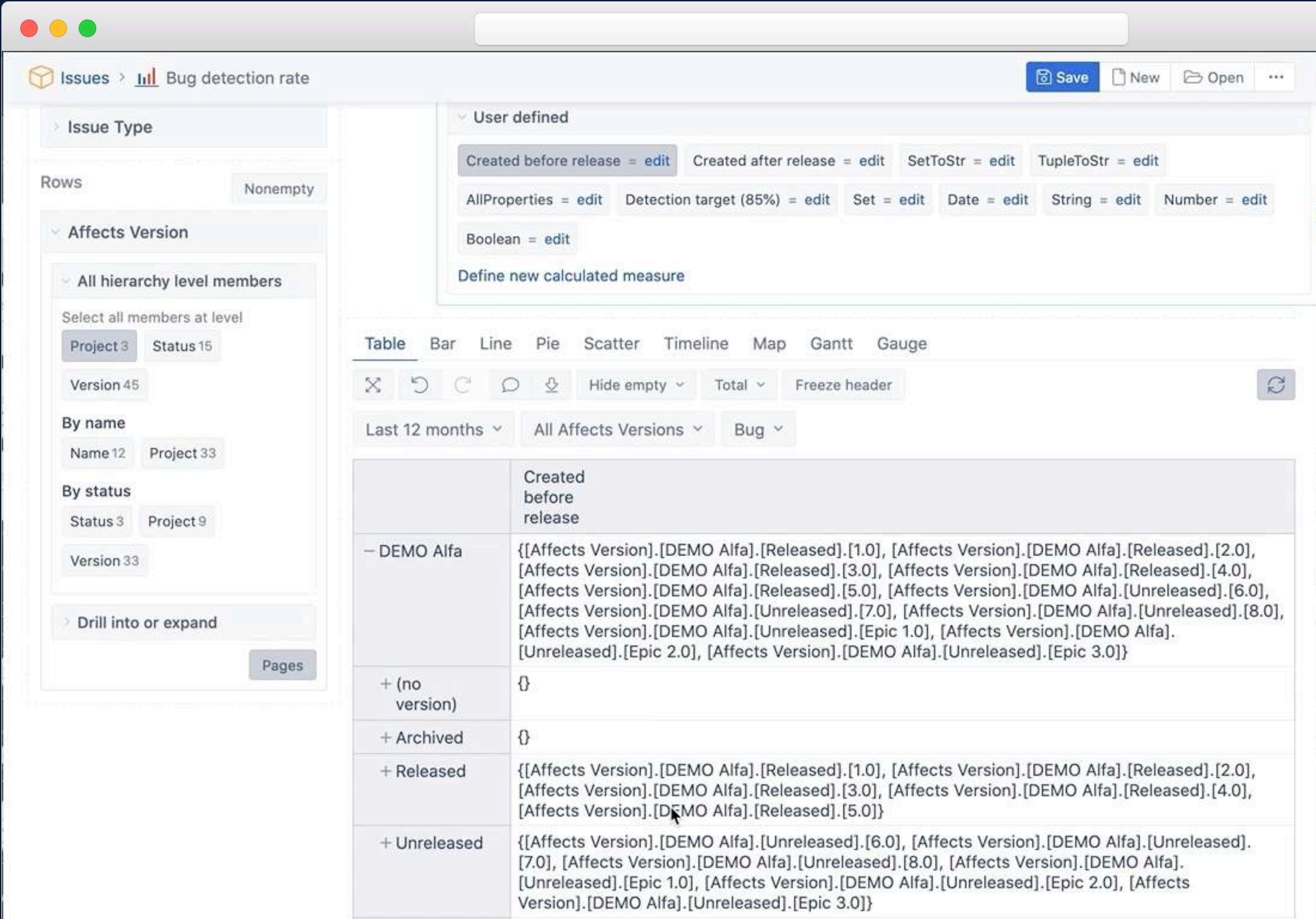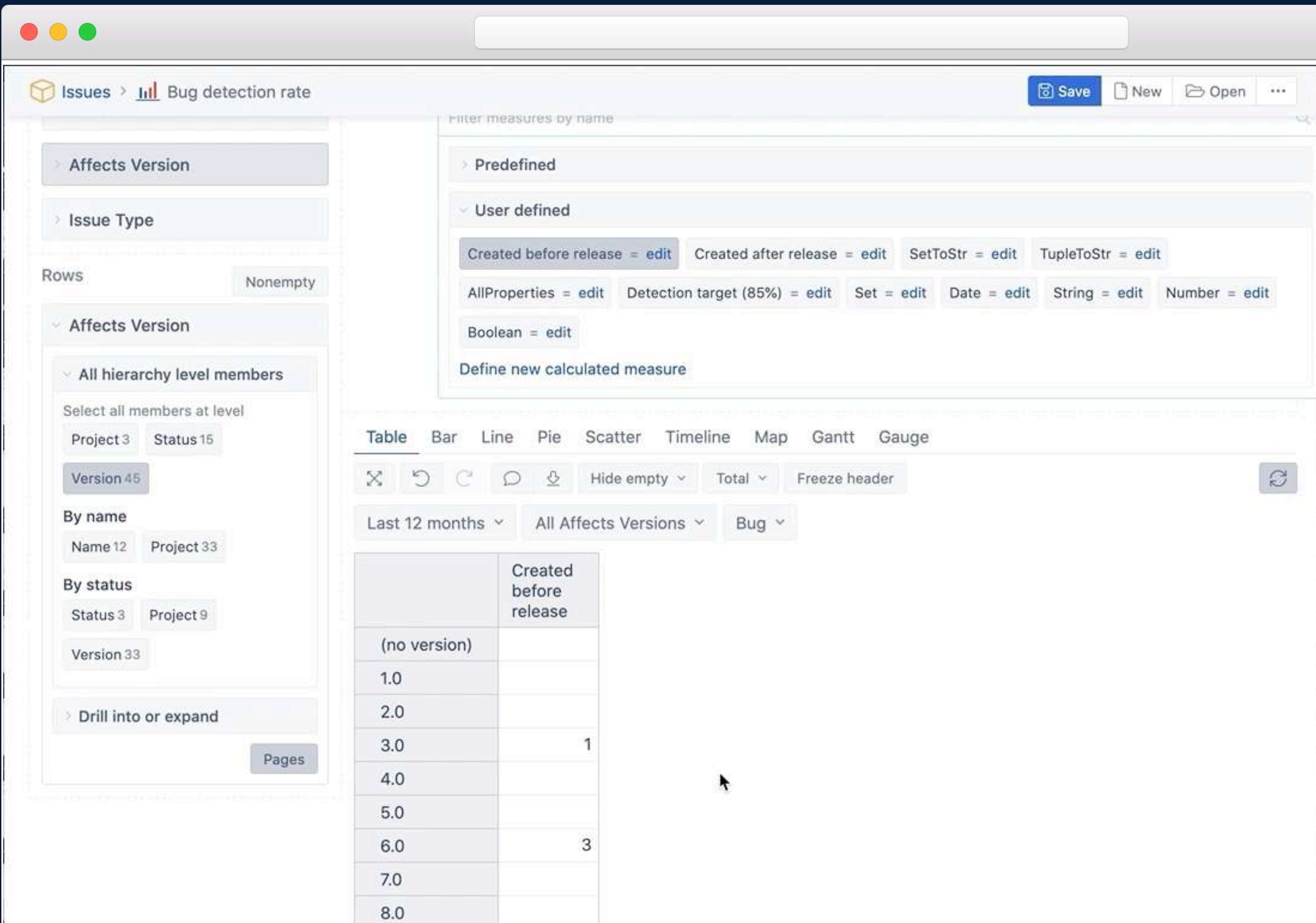
Update   Delete   cancel

STEPS TO TEST CALCULATION

Ingredients of the function

What is in the set?

Place the set's lowest level on rows

STEPS TO TEST CALCULATION

Ingredients of the function

What is in the set?

Place the set's lowest level on rows

Check numerical expression

STEPS TO TEST CALCULATION

Ingredients of the function

What is in the set?

Place the set's lowest level on rows

Check numerical expression

Add report context

... know the MDX cube
... the three magical functions
... test your calculation methodically as you write it
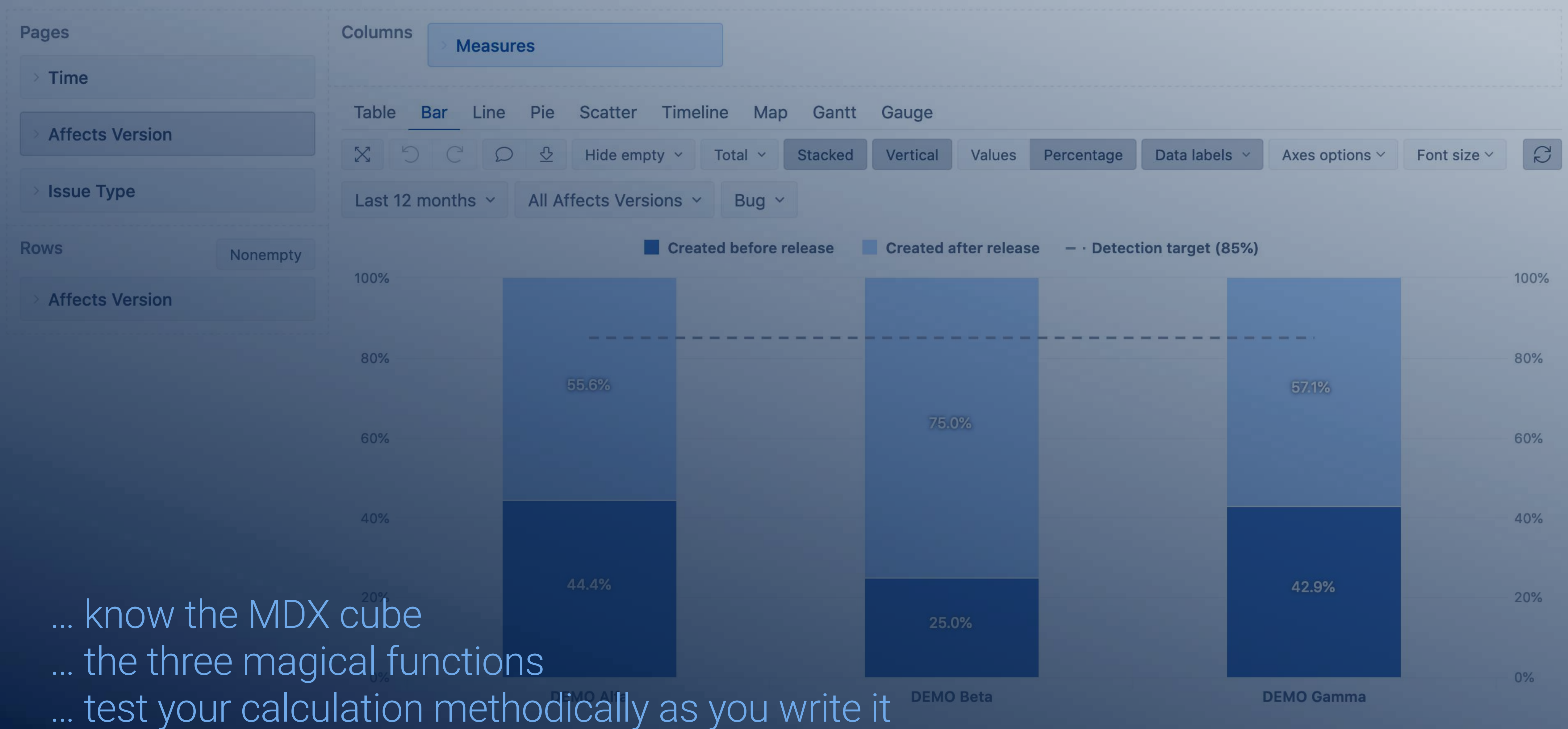
Happy traveling!

Thank you!

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support@eazybi.com