Behind complex filters

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I like to find solutions

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Community Days
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Let's start easy

Enablers on complex cases in eazyBI

Use cases
eazyBI is a business intelligence tool for data analysis and visualisation with built-in Jira data import.
Make reporting easy, hard scenarios possible
Make reporting easy
<table>
<thead>
<tr>
<th>Issue</th>
<th>Issues created</th>
<th>Original estimated</th>
<th>Hours spent</th>
<th>Issue created date</th>
<th>Issue resolution date</th>
<th>Issue due date</th>
<th>Issue assignee</th>
<th>Issue type</th>
<th>Issue priority</th>
<th>Issue status</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA-1</td>
<td>1</td>
<td>8.00</td>
<td>7.00</td>
<td>Jan 02 2019</td>
<td>Jan 31 2019</td>
<td>Mar 27 2019</td>
<td>David Sand</td>
<td>Story</td>
<td>Low</td>
<td>Done</td>
</tr>
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</tr>
<tr>
<td>DA-10</td>
<td>1</td>
<td>12.00</td>
<td>11.00</td>
<td>Jan 18 2019</td>
<td>Feb 22 2019</td>
<td>Feb 22 2019</td>
<td>Duncan Snow</td>
<td>Story</td>
<td>Medium</td>
<td>Done</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>DA-104</td>
<td>1</td>
<td>8.00</td>
<td>10.00</td>
<td>Jul 02 2019</td>
<td>Oct 15 2019</td>
<td>Nov 19 2019</td>
<td>Duncan Snow</td>
<td>Story</td>
<td>Medium</td>
<td>Done</td>
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</tr>
<tr>
<td>DA-108</td>
<td>1</td>
<td>8.00</td>
<td>8.00</td>
<td>Sep 02 2019</td>
<td>Sep 26 2019</td>
<td>Feb 15 2019</td>
<td>Sandra Adams</td>
<td>Story</td>
<td>Lowest</td>
<td>Done</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DA-11</td>
<td>1</td>
<td>6.00</td>
<td>7.00</td>
<td>Jan 20 2019</td>
<td>Feb 11 2019</td>
<td>Feb 15 2019</td>
<td>Sandra</td>
<td>Story</td>
<td>Low</td>
<td>Done</td>
</tr>
</tbody>
</table>

- DA-1: Delacroix's malice costliness resurface maharajah brusqueness apportionment vividness colanders integrating
- DA-10: Fiever fan's phloxes playroom's warmest ridiculed bashfulness greensward
- DA-104: Customer selected new team for their project
- DA-108: Sunbather skullcaps infestation risen less education's knacker's Camry
- DA-11: Madyx bulking
Hard scenarios possible
Jira JQL queries

- status != Declined
- component = Development or labels = Development
- duedate is not EMPTY AND assignee was in membersOf(jira-developers)
Hard scenarios main enablers

**MDX**
MDX calculations during report run

**JavaScript custom fields**
Use JavaScript to calculate data during import
MDX calculations
Will cover most scenarios and effectively uses imported data. Could get complex and impact performance

Calculated members
Aggregates in **dimensions** - groups dimension members for easier usage in reports

Calculated measures
Calculations in **Measures** - percentages, comparisons, custom metrics, KPI, OKR, etc.
Calculated members

Use members and member properties of the dimension only. Avoid calculations (+, -, /). While they might work, they could lead to inconsistent results and performance problems.
Calculated JavaScript custom field

Define a new field (measure, dimension) in eazyBI advanced settings.
Use JavaScript to calculate values for the field

```
[jira.customfield_NNNNN]
name = "NNNNN name"
data_type = "string"
dimension = true
javascript_code = ''
  // JavaScript code goes here
''
```
**JavaScript**
eazyBI uses basic JavaScript

With [https://underscorejs.org/](https://underscorejs.org/) library

We support `strftime` function and modification for `Date.parse` function for parsing date time string in ISO8601 format as well.

**Jira issue data structure**
eazyBI imports data based on Jira issues. You can access any imported fields via JavaScript.
Hard scenarios possible

MDX

JavaScript custom fields

Test your JavaScript in Custom Javascript code in import options

Delete it when testing is done!
```javascript
# example 2
[jira.customfield_dev_sup]
name = "Dev vs Sup"
data_type = "string"
dimension = true
javascript_code = ""
var isDev = false;
if (issue.fields.labels.indexOf("Development") > -1) {
  isDev = true
}
else {
  for (var i = 0; i < issue.fields.components.length; i++) {
    if (issue.fields.components[i].name == "Development") {
      isDev = true;
      break;
    }
  }
}
issue.fields.customfield_dev_sup = (isDev == true) ? "Development" : "Support"

# example 3
[jira.customfield_wasindevwithduedate]
name = "JavaScript"
data_type = "integer"
measure = true
multiple_dimensions = ["Time","Assignee"]
javascript_code = ""
if (issue.fields.duedate) {
  var assigneeInDev = ['dsand', 'dsnow'];
  var noAssigneeChange = true;
  var assigneeHistory = [];
  var assigneeSet = issue.fields.created;
  if (issue.changelog && issue.changelog.histories && issue.changelog.histories.length > 0
    var histories = issue.changelog.histories;
```
### Jira import options

#### Custom fields

After projects selection, you can select available custom fields which you would like to import. Read more about custom fields import in the Jira custom fields documentation.

<table>
<thead>
<tr>
<th>Custom field</th>
<th>Import as dimension</th>
<th>Import as measure</th>
<th>Import as property</th>
<th>Import value changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue links show</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other hide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dev vs Sup</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Valid</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>JavaScript</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

- **Import** or **Save** or **back**

Click Import to start the import right now. Click Save to change the options for the next regular import.
Use cases
One dimension

**Calculated member** in respective dimension with function **Aggregate** and some filtering options

**Limitations**
Function **Except** might not work as expected in multiple value dimensions, for example, Labels

**Performance risks**
Any **multiple** selection or calculated member with multiple members on **Pages** multiplies calculations
Aggregate(
    Except(
        [Status].[Status].Members,
        [Status].[Declined])
)
status != Declined

Report with MDX
status != Declined

Report with JavaScript custom field
Several dimensions with OR filter
OR filter for dimension selections is not supported, calculated measure is required

Consider arithmetical calculations
Several dimensions with OR filter

OR filter for dimension selections is not supported, calculated measure is required

Consider arithmetical calculations

Consider filtering (by projects)

MDX
Several dimensions with OR filter

OR filter for dimension selections is not supported, calculated measure is required

Consider arithmetical calculations

Consider filtering (by projects)

Create calculation for each measure

MDX
Several dimensions with OR filter
OR filter for dimension selections is not supported, calculated measure is required
Consider arithmetical calculations
Consider filtering (by projects)
Create calculation for each measure
var isDev = false;
if (issue.fields.labels.indexOf("Development") > -1 )
{
    isDev = true
}
else {
    for (var i=0; i < issue.fields.components.length; i++) {
        if (issue.fields.components[i].name == "Development") {
            isDev = true;
            break;
        }
    }
}
issue.fields.customfield_dev_sup = (isDev == true ) ? "Development" : "Support" ;

SUM(
    Filter(
        Descendants([Project].CurrentMember,[Project].[Component]),
        [Project].CurrentMember.Name = "Development"),
    [Measures].[Issues created]
) +
([Measures].[Issues created],
[Label].[Development])
- SUM(
    Filter(
        Descendants([Project].CurrentMember,[Project].[Component]),
        [Project].CurrentMember.Name = "Development"),
([Measures].[Issues created],
[Label].[Development])
);
Report with MDX

component = Development or labels = Development

[Chart showing development issues created, resolved, and open over time from January 2019 to February 2020.]

Table, Bar, Line, Pie, Scatter, Timeline, Map, Gantt, Gauge options are available.
component = Development or labels = Development

Report with JavaScript custom field
SUM(
    Filter(
        Descendants([Issue].CurrentMember,[Issue].[Issue]),
        NOT IsEmpty([Measures].[Issue due date])
    ),
    ([Measures].[Transitions to issues count],
    [Assignee Group].[jira-developers])
)
if (issue.fields.duedate) {
    var assigneeInDev = ['dsand','dsnow'];
    var noAssigneeChange = true;
    var assigneeHistory = [];
    var assigneeSet = issue.fields.created;
    if (issue.changelog && issue.changelog.histories &&
        issue.changelog.histories.length > 0) {
        var histories = issue.changelog.histories;
        for (var i = 0; i < histories.length; i++) {
            var history = histories[i];
            if (history.items && history.items.length > 0) {
                for (var n = 0; n < history.items.length; n++) {
                    var item = history.items[n];
                    if (item.field == 'assignee' ) {
                        if(noAssigneeChange && assigneeInDev.indexOf(item.from) > -1) {
                            assigneeHistory.push(assigneeSet.toString().substr(0,10) + "," + item.from + ",1");
                        }
                        if (assigneeInDev.indexOf(item.to) >-1) {
                            assigneeHistory.push(assigneeSet.toString().substr(0,10) + "," + item.to + ",1");
                        }
                    }
                }
            }
        }
        if(noAssigneeChange ) {
            if (issue.fields.assignee &&
                assigneeInDev.indexOf(issue.fields.assignee.name) > -1) {
                assigneeHistory.push(assigneeSet.toString().substr(0,10) + "," + issue.fields.assignee.name + ",1");
            }
        }
        issue.fields.customfield_wasindevwithduedate = assigneeHistory.join("\n");
    }
}

MDX

JavaScript

SUM(
    Filter(
        Descendants([Issue].CurrentMember,[Issue].[Issue]),
        NOT IsEmpty([Measures].[Issue due date]))
    ,
    ([Measures].[Transitions to issues count],
    [Assignee Group].[jira-developers])
)
<table>
<thead>
<tr>
<th>Assignee</th>
<th>MDX</th>
<th>JavaScript</th>
</tr>
</thead>
<tbody>
<tr>
<td>David Sand</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Duncan Snow</td>
<td>20</td>
<td>23</td>
</tr>
</tbody>
</table>
## Report with custom measure

<table>
<thead>
<tr>
<th>Demos</th>
<th>Story</th>
<th>All Status</th>
<th>Duncan Snow</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA-10 Flower fans' phloxes playroom's wormiest ridiculed bashfulness greensward</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>DA-104 Customer selected new team for their project</td>
<td>1</td>
<td>1</td>
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<tr>
<td>DA-113 Specifying Rodgers peerage bronchio Amaterasu Calderon's bushier campanile's mistreating leprechaun</td>
<td>1</td>
<td>1</td>
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<tr>
<td>DA-118 Frustrate Salinger's tones lodgers tactotums</td>
<td>1</td>
<td>2</td>
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<tr>
<td>DA-131 Quadruplicated Iroquoian prosecutee snags defaced mellifluousness gridiron's jams postful's</td>
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<td>2</td>
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<tr>
<td>DA-136 Razed sacred pinball hortil's 88min's</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>DA-139 Dulled fattier timbers catalyst's intricacy inaugurates or nougat</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>DA-155 Henry titnica chalky leapfrogging vulcui</td>
<td>1</td>
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<tr>
<td>DA-161 Johns testifies chronological Fukuoka's Heroclitus's crackliest chorusing teamwork Capella's besetting</td>
<td>1</td>
<td>2</td>
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<tr>
<td>DA-170 Chinking Puritans implementation unluckier humaneness's intents</td>
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<tr>
<td>DA-176 Quills afternoons dustiness's wonderment warding scientists stickies</td>
<td>1</td>
<td>2</td>
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<tr>
<td>DA-180 Romes whatsoever dismantles revolutionizing frizzed crescent kayaked</td>
<td>1</td>
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<td>DA-194 Cobra's calculus gingkos satyrs protectors</td>
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<tr>
<td>DA-28 Ragas implantation Levi's clubfoot's diligent Derbies Leipzig's silkening</td>
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<tr>
<td>DA-3 Windburns irritates enjoying posits incident's used embroiders</td>
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<tr>
<td>DA-31 Henceforward swaggerer Cabral omnibus's Kuwailts sacking's</td>
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<tr>
<td>DA-49 Schist's Brno refrigerator's obsolete argon shies administrations</td>
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<tr>
<td>DA-51 Barrack yodel Disney unsympathetic destructively Dristan hiked oppression's</td>
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<tr>
<td>DA-78 Intricously tokenism stifled cigarette's validly Fleming's denaturing marcas Mayans cocononed</td>
<td>1</td>
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</tr>
<tr>
<td>DA-99 Adding perimeter's uniformed reprimand hypertension forfeiting scaling refinishes</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20</td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>
MDX vs JavaScript

MDX
- Gives all the benefits of BI
- Might impact performance
- MDX could be hard to learn

JavaScript custom fields
- Calculations during import
- JavaScript knowledge is quite general
- Extends data model and size of database
Thank you!

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