

Managing Large Data Sets & Smart Archiving

Johan Hedman
Square Moon



Johan Hedman

Lead **Developer** at Square Moon
and **curious** adventurer!






Do you archive data

Join at [menti.com](#) | use code **2384 1381**

Mentimeter



JH

Menti

What archive technique...

Choose a slide to present

Understanding the Problem

What Slow FileMaker down

Large record sets

Many fields

Calculations, especially Unstored Calculations

Index on non-critical fields

Complex relationships graph (TOGs)

Field Level Bottlenecks

Too many fields

Unstored Calculations – recalculated on every load or find

Auto-Enter Calculations – trigger to often

Index fields - large indexes grow exponentially with more data

Summary Fields – slows down list views and reports

Table Occurrence Group (TOG)

Every layout and calc linked to a TOG add **processing costs**

Complex joins – more data evaluated at once

Performance hits grow as more TOs are **linked** to one anchor

How to Work Smarter with Large Data sets

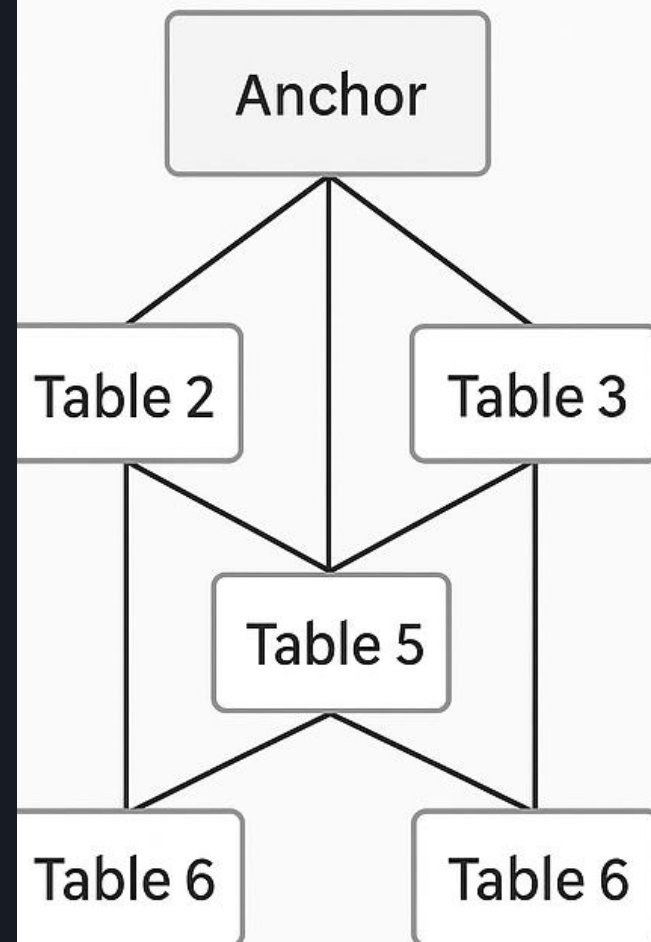
Minimize number of fields shown on high-traffic layouts

When possible, use stored calculations instead of unstored

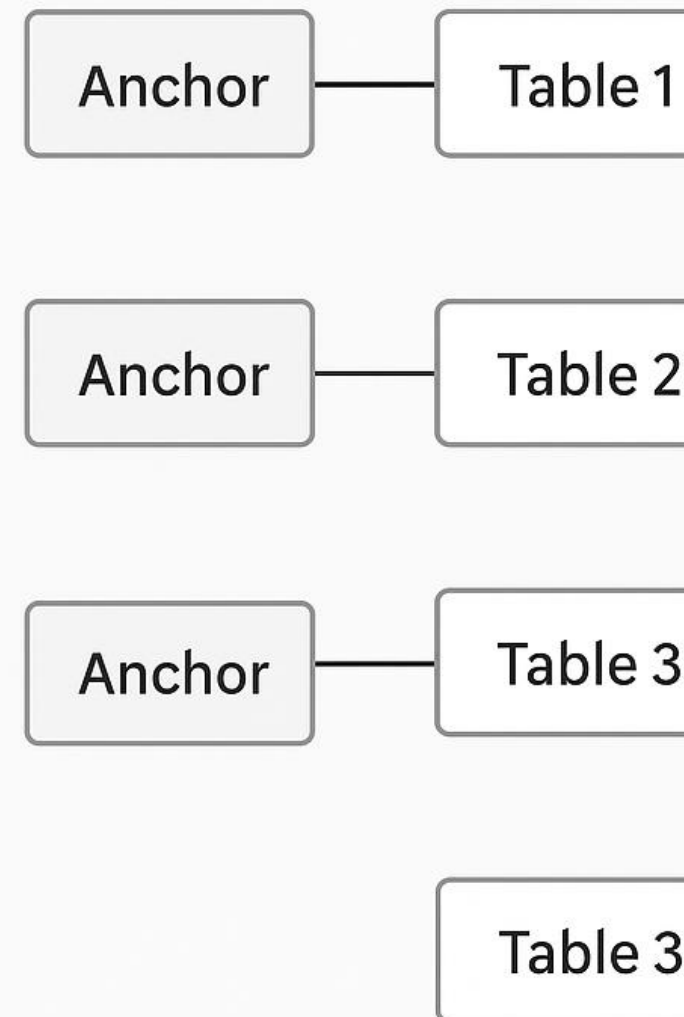
Watch your TO relationship like a performance budget

Archive rarely used data

Complex TOG

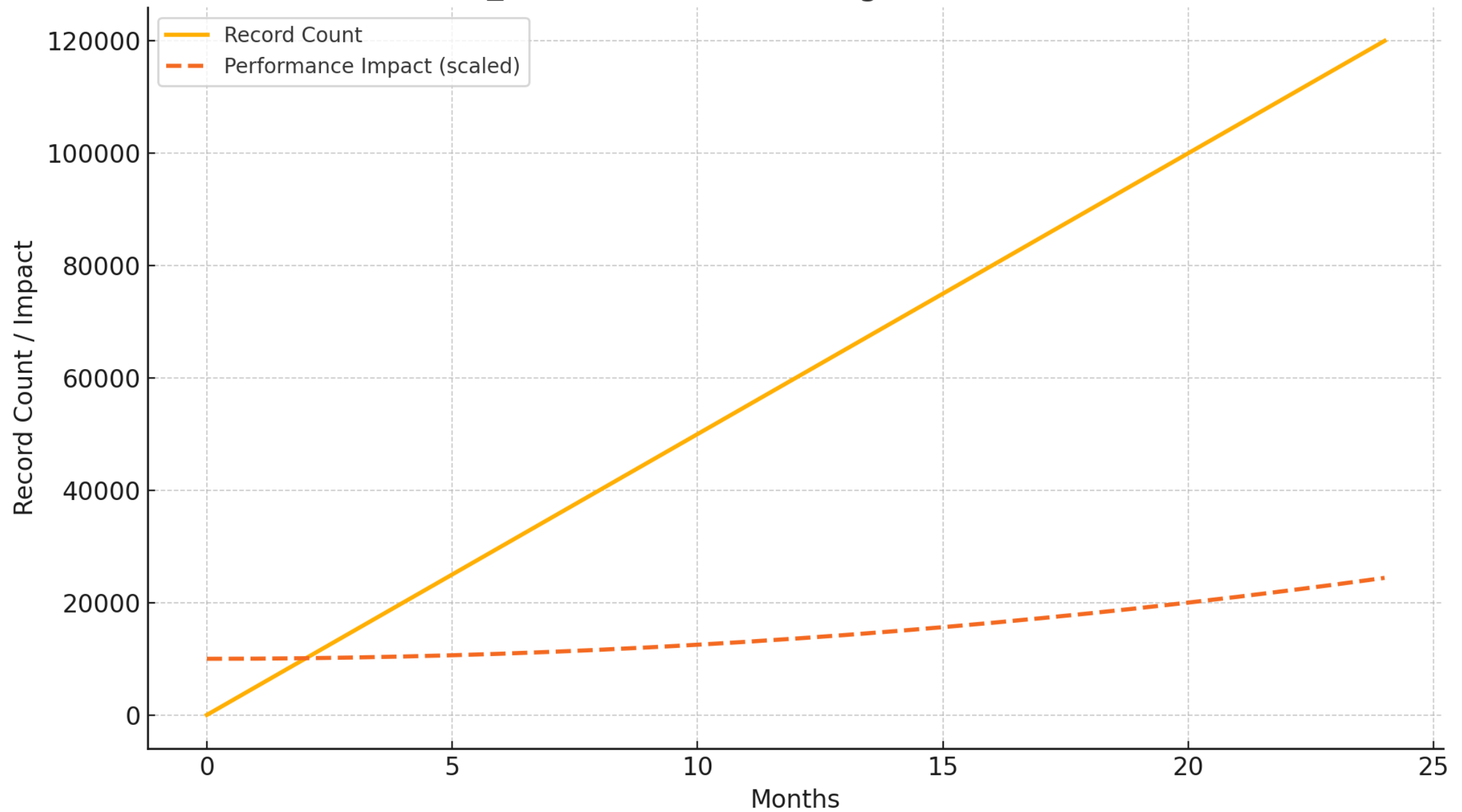


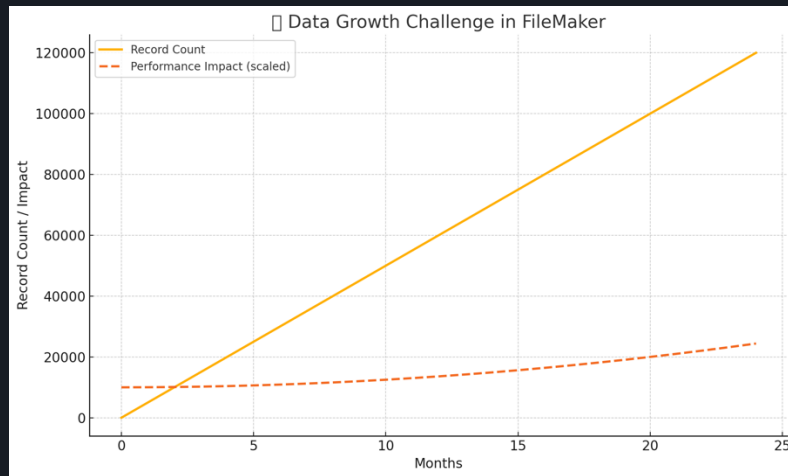
Modular TOG



When to start taking action

□ Data Growth Challenge in FileMaker





100,000+ - Slower finds, indexing lag, especially with unstored calcs and noticeable UI slowdown, especially in list views and unoptimized layouts.

500,000+ - Portals load slowly, sorting becomes sluggish, script execution slows. Reports and searches take longer

1 million+ - Backup times increase, UI becomes clunky, multi-user stress grows

5 GB+ file size - File recovery becomes risky, longer downtime in case of corruption

The Cost of Holding Everything



Slower Performance



Bigger Backups



Complex UI for Users



Higher Hosting Costs



Delete vs Archive



Legal rules



Operational needs



Historical insights



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 Marinometer

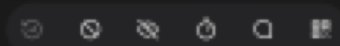
JH ▾

Menti

What archive techniqu...



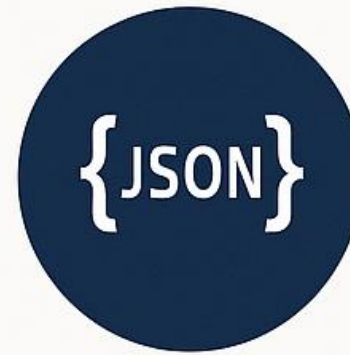
Choose a slide to present



Introducing Smart Archiving



Identify



Export



Store



Save Money,
Boost Performance

Name
Johan Hedman

Company
Gekko&CoLLC



Photo

Johan Hedman

Lead Developer



Company

Phone/Fax

Email

Address

JSON

COMPANY

WEBSITE



Gekko&CoLLC



www.engageu.eu

engageu.eu

Power of the Present - Force of the Future

Contact us: contact@engageu.eu



REGISTER

Tickets

Group rates

Add-ons

YouTube

Layout: Contact Details View As: Preview A¹ Edit Layout

< Contacts

CONTACT

Name

Johan Hedman

Company

Gekko&CoLLC

Photo

Johan Hedman

Lead Developer

Company

Phone/Fax

Email

Address

JSON

ⓧ Home

⌵

+46276572409

ⓧ Mobile

⌵

+6998876333

ⓧ Fax

⌵

+1234234234

ⓧ Something

⌵

+6923423422

ⓧ Mobile

⌵

+47234234112

ⓧ Work

⌵

+3234214324

ⓧ Fax

⌵

+45654624523

ⓧ Mobile

⌵

+34523234324

ⓧ Home

⌵

+34524234324

ⓧ Mobile

⌵

+34542353453

ⓧ Type

⌵

Number


SQUARE MOON

En del av Aderian Group

SQUARE MOON
En del av Aderian Group

Layout: Contact Details
View As:
Preview
A^a Edit Layout

< Contacts
CONTACT

<div> <div>Name</div> <div>Johan Hedman</div> </div> <div> <div>Company</div> <div>Gekko&CoLLC</div> </div>					
<div>  </div> <div>Photo</div>	Company	Phone/Fax	Email	Address	JSON
	<div> <div>Home</div> <div> <div>Dalgränden 97</div> <div>Address Line 2</div> </div> <div> <div>12898</div> <div>PERSTORP</div> <div>Sweden</div> </div> </div>				
	<div> <div>Work</div> <div> <div>Line 1</div> <div>Address Line 2</div> </div> <div> <div>Postal Code</div> <div>STOCKHOLM</div> <div>Sweden</div> </div> </div>				
	<div> <div>Type</div> <div> <div>Address Line 1</div> <div>Address Line 2</div> </div> <div> <div>Postal Code</div> <div>City</div> <div>Country</div> </div> </div>				

Johan Hedman

Lead Developer

Layout: Contact Details View As: Preview A¹ Edit Layout

< Contacts

CONTACT

Name	Company			
Johan Hedman	Gekko&CoLLC			

Photo

Johan Hedman

Lead Developer

Company	Phone/Fax	Email	Address	JSON
<pre>{ "Addresses" : ["6C7A2781-FE60-4143-8D7A-680DE998E306", "A33692BB-6DBE-4B7E-8187-C6F9D12FD5F8"], "Company" : "Gekko&CoLLC", "EmailAddresses" : ["16171FD3-1AC5-4879-8E1E-6975456523CF", "3A95A5A7-78E7-40A0-BF62-8FA10A83FDDB", "47E999E0-86DC-479F-A103-F15CDE92FAD6"], "ModificationTimestamp" : "4/25/2025 9:45:55 AM", "ModifiedBy" : "admin", "Name" : "Olle Lundström-Karlsson", "PhoneNumbers" : ["A3278D0B-CD6D-477D-9478-DF79E49B2BB6", "67E60F5F-756D-43D7-BAB9-390090ED61FC", "7DBEB940-6123-4226-AD83-F8C897ABDFA7", "453728CC-8ADE-4BCA-BA89-0D71C1E45F7E", "BBD14974-5095-477A-B7EA-D2EDC5514804", "E27254C9-FC4E-42E2-8A64-E582D276290E", "22CA2DBD-A235-4DB8-803E-CA5D959C39DA", "2A97E606-0436-47C0-8330-AF379585F3BB", "17FF4E31-C5FE-4D04-B554-3CDFDBB9BA9E", "B5915D53-53F0-4DD9-A1B5-3A53E3EE694C"], "PrimaryKey" : "197", "Website" : "www.engageu.eu", "tableName" : "Contacts"}</pre>				





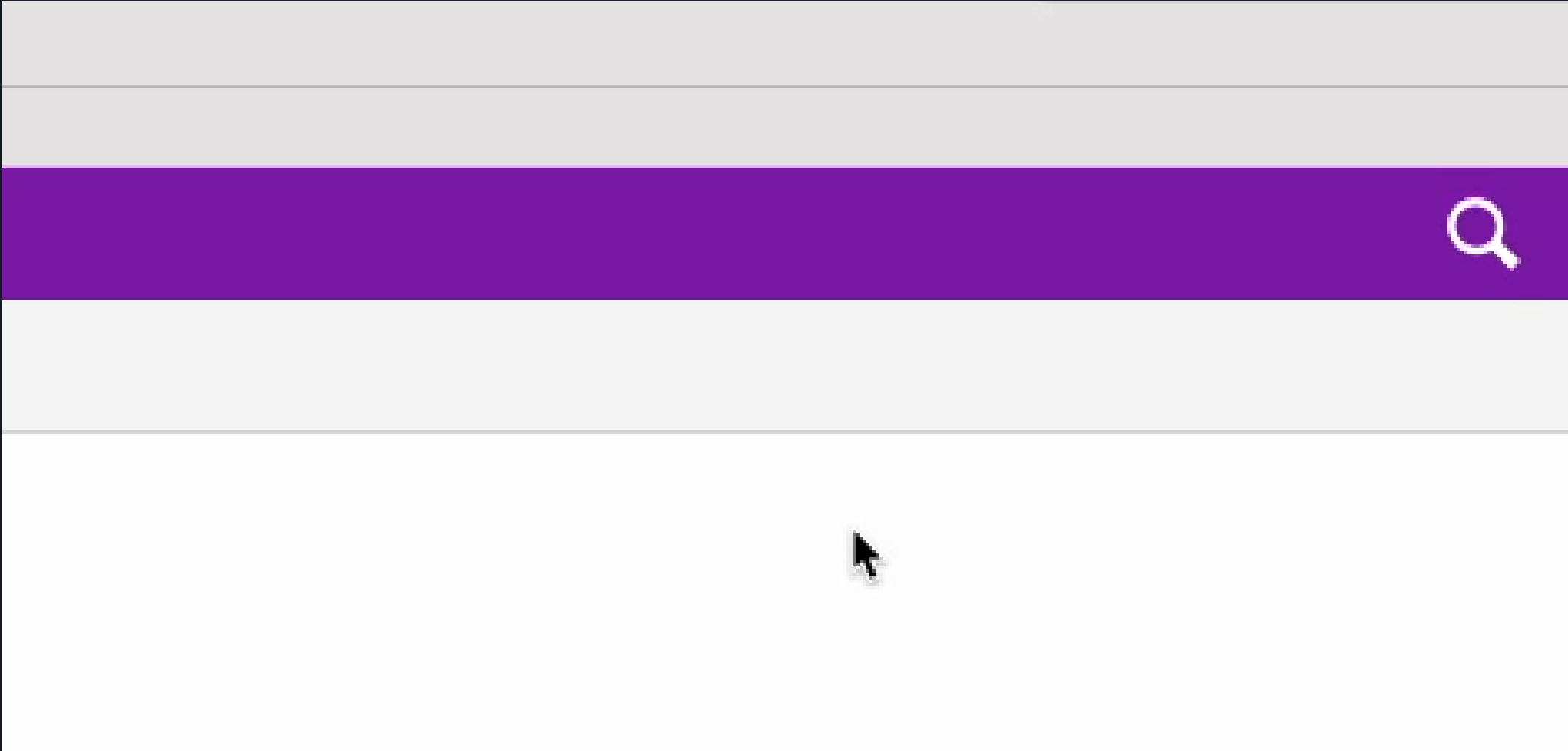
/sqm-test		
Filename	Size	Modified
>  Addresses	--	Unknown
>  Contacts	--	Unknown
>  EmailAddresses	--	Unknown
>  PhoneNumbers	--	Unknown
4 Items		

Table: ArchiveData 12 fields

Field Name	Type
✦ PrimaryKey	Text
✦ CreationTimestamp	Timestamp
✦ CreatedBy	Text
✦ ModificationTimestamp	Timestamp
✦ ModifiedBy	Text
✦ Type	Text
✦ Value1	Text
✦ Value2	Text
✦ Value3	Text
✦ Value4	Text
✦ Value5	Text
✦ Value6	Text






















Sök			
MEDLEM			
	Björn Hedman	Permanent Bilskydd PBS AB	➤
	KARL INGVAR HEDMAN	Permanent Bilskydd PBS AB	➤
	Peter Hedman	Neuroförbundet	➤
	David Hedman Heidami	Neuroförbundet	➤
	Hans-Olov Hedman	Skattebetalarna	➤
	Josefin Hedman	OBM-gruppen	➤
... och ytterligare 21 poster			
PERSON			
	Björn Hedman	Permanent Bilskydd PBS AB	➤
	KARL INGVAR HEDMAN	Permanent Bilskydd PBS AB	➤
	Peter Hedman	Neuroförbundet	➤
	David Hedman Heidami	Neuroförbundet	➤
	Hans-Olov Hedman	Skattebetalarna	➤
	Josefin Hedman	OBM-gruppen	➤
... och ytterligare 26 poster			
FÖRETAG			
	Hedmans Schakt i Åsarna AB	Småföretagarna	➤
FÖRSÄKRING			
	Peder Hedman	Skattebetalarna Olycksfall Privatvård	➤
	Greger Hedman	Skattebetalarna Olycksfall Privatvård	➤
	Hedmans i Västra Götaland AB	Såifa Liv & Hälsa	➤
	PER GÖRAN HEDMAN	PBS Självriskreducering	➤
	Folke Emanuel Hedman	PBS Självriskreducering	➤
	PER GÖRAN HEDMAN	PBS Självriskreducering	➤


Table: ArchiveData 12 fields

Field Name	Type
✦ PrimaryKey	Text
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✦ ModificationTimestamp	Timestamp
✦ ModifiedBy	Text
✦ Type	Text
✦ Value1	Text
✦ Value2	Text
✦ Value3	Text
✦ Value4	Text
✦ Value5	Text
✦ Value6	Text

Layout: Contact Details View As: Preview A¹ Edit Layout

< Contacts CONTACT

Name	Company			
Johan Hedman	Gekko&CoLLC			



Photo

Johan Hedman

Lead Developer

Company	Phone/Fax	Email	Address	JSON
<pre>{ "Addresses" : ["6C7A2781-FE60-4143-8D7A-680DE998E306", "A33692BB-6DBE-4B7E-8187-C6F9D12FD5F8"], "Company" : "Gekko&CoLLC", "EmailAddresses" : ["16171FD3-1AC5-4879-8E1E-6975456523CF", "3A95A5A7-78E7-40A0-BF62-8FA10A83FDDB", "47E999E0-86DC-479F-A103-F15CDE92FAD6"], "ModificationTimestamp" : "4/25/2025 9:45:55 AM", "ModifiedBy" : "admin", "Name" : "Olle Lundström-Karlsson", "PhoneNumbers" : ["A3278D0B-CD6D-477D-9478-DF79E49B2BB6", "67E60F5F-756D-43D7-BAB9-390090ED61FC", "7DBEB940-6123-4226-AD83-F8C897ABDFA7", "453728CC-8ADE-4BCA-BA89-0D71C1E45F7E", "BBD14974-5095-477A-B7EA-D2EDC5514804", "E27254C9-FC4E-42E2-8A64-E582D276290E", "22CA2DBD-A235-4DB8-803E-CA5D959C39DA", "2A97E606-0436-47C0-8330-AF379585F3BB", "17FF4E31-C5FE-4D04-B554-3CDFDBB9BA9E", "B5915D53-53F0-4DD9-A1B5-3A53E3EE694C"], "PrimaryKey" : "197", "Website" : "www.engageu.eu", "tableName" : "Contacts"}</pre>				

/Contacts/

└─ 0ab45c2d-1fd3-4f7b-b07a-5f02d99123aa.json

/Projects/

└─ 6dc77e94-fd4e-44ac-b5e6-c07e109e3ab8.json

Layout: Contact...rchive Web View As: Preview A^a Edit Layout

[Contacts](#) CONTACTS

Company:
Gekko&CoLLC

ModificationTimestamp:
4/25/2025 9:45:55 AM

ModifiedBy:
admin

Name:
Olle Lundström-Karlsson

PrimaryKey:
197

Website:
www.engageu.eu

tableName:
Contacts

Addresses EmailAddresses PhoneNumbers JSON

📞

Type	Address Line 1	City	Postal Code
Home	Dalgränden 97	PERSTORP	12898
Work	Line 1	STOCKHOLM	N/A

[< Contacts](#)

CONTACTS

Company:

Gekko&CoLLC

ModificationTimestamp:

4/25/2025 9:45:55 AM

ModifiedBy:

admin

Name:

Olle Lundström-Karlsson

PrimaryKey:

197

Website:

www.engageu.eu

tableName:

Contacts

Addresses

EmailAddresses

PhoneNumbers

JSON

**Type****Address**

Work

pidxebjeuz@wwijz.no

Personal

something@email.com

Personal

email2@email.com

[< Contacts](#)

CONTACTS

Company:

Gekko&CoLLC

ModificationTimestamp:

4/25/2025 9:45:55 AM

ModifiedBy:

admin

Name:

Olle Lundström-Karlsson

PrimaryKey:

197

Website:

www.engageu.eu

tableName:

Contacts

Addresses

EmailAddresses

PhoneNumbers

JSON

**Type****Address**

Work

pidxebjeuz@wwijz.no

Personal

something@email.com

Personal

email2@email.com

Layout: Contact...rchive Web View As: Preview A¹ Edit Layout

[← Contacts](#) CONTACTS

Company:
Gekko&CoLLC

ModificationTimestamp:
4/25/2025 9:45:55 AM

ModifiedBy:
admin

Name:
Olle Lundström-Karlsson

PrimaryKey:
197

Website:
www.engageu.eu

tableName:
Contacts

AddressesEmailAddressesPhoneNumbersJSON

⌂

Type	Number
Home	+46276572409
Mobile	+6998876333
Fax	+1234234234
Something	+6923423422
Mobile	+47234234112
Work	+3234214324
Fax	+45654624523
Mobile	+34523234324
Home	+34524234324
Mobile	+34542353453

htmlGridOneColumnNoArrays (Contacts::JsonDataObject)

Calculation

Calculation

Calculation

JSON

```
htmlTableMappedColumns ( $$JSONArrayData ;  
While (   
[  
_counter = 1 ;  
_json = Contacts::JsonDataObject ;  
_listElements = JSONListKeys ( _json ; "" ) ;  
_buttonNames = ""  
];  
_counter ≤ ValueCount ( _listElements ) ;  
[  
_elementName = GetValue ( _listElements ; _counter ) ;  
_isArray = JSONGetElementType ( _json ; _elementName ) = 4 ;  
_buttonNames = If ( _isArray ; List ( _buttonNames ; _elementName ) ; _buttonNames ) ;  
_counter = _counter + 1  
];  
JSONGetElement ( WebViewerConfigTable::JsonConfig ; GetValue ( _buttonNames ; 1 ) )  
)  
)
```

< Calculation

CALCULATION

htmlGridOneColumnNoArrays (Contacts::JsonDataObject)



htmlTableMappedColumns (\$\$JSONArrayData ;

While (

```
[
  _counter = 1 ;
  _json = Contacts::
  _listElements = JS
  _buttonNames = ""
];
```

_counter ≤ ValueC

```
[
  _elementName = (
  _isArray = JSONG
  _buttonNames = If
  _counter = _counte
];
```

JSONGetElement

)

)

Calculation

Calculation

Calculation

JSON

Set Script Triggers

Specify a script to be run for an event

Event	Script
<input type="checkbox"/> OnObjectEnter	
<input type="checkbox"/> OnObjectKeystroke	
<input type="checkbox"/> OnObjectModify	
<input type="checkbox"/> OnObjectValidate	
<input type="checkbox"/> OnObjectSave	
<input type="checkbox"/> OnObjectExit	
<input checked="" type="checkbox"/> OnPanelSwitch	"Tab trigger"
<input type="checkbox"/> OnObjectAVPlayerChange	

Script Trigger Properties

Event: OnPanelSwitch
The script will be run before panel is switched.

Script: "Tab trigger"

Enable in: ☒ Browse ☐ Find

Result: If the script returns true, the original event proceeds normally, otherwise the event is canceled.

Cancel

OK

Tab trigger

```

1 Set Variable [ $Param ; Value: GetValue ( Get(TriggerTargetPanel) ; 2 ) ]
2 If [ $Param = "Phone" or $Param = 3 ]
3
4     Set Variable [ $$JSONArrayData ; Value: "" ]
5     Set Variable [ $counter ; Value: 1 ]
6
7     # Save all Phone data into same variable
8     Loop [ Flush: Always ]
9
10         Perform Script [ Specified: From list ; "Get JSON Object" ; Parameter: JSONSetElement ( "" ; [ "type" ; "PhoneNu... ]
11         Set Variable [ $PhoneJSON ; Value: Get(ScriptResult) ]
12
13         If [ not IsEmpty ( $PhoneJSON ) ]
14             Set Variable [ $$JSONArrayData ;
15             Value: JSONSetElement ( $$JSONArrayData ; "[" & $counter - 1 & "]" ; $PhoneJson ; 3 ) ]
16         End If
17
18         Exit Loop If [ ValueCount ( JSONListValues ( Contacts::JsonDataObject ; "PhoneNumbers" ) ) = $Counter ]
19         Exit Loop If [ $Counter = 10 ]
20
21         Set Variable [ $counter ; Value: $counter + 1 ]
22
23     End Loop
24 Else If [ $Param = "Email" or $Param = 2 ]
25
26     Set Variable [ $$JSONArrayData ; Value: "" ]
27     Set Variable [ $counter ; Value: 1 ]
28
29     # Save all Phone data into same variable
30     Loop [ Flush: Always ]
31
32         Perform Script [ Specified: From list ; "Get JSON Object" ; Parameter: JSONSetElement ( "" ; [ "type" ; "EmailAd... ]
33         Set Variable [ $EmailJSON ; Value: Get(ScriptResult) ]
34
35         If [ not IsEmpty ( $EmailJSON ) ]
36             Set Variable [ $$JSONArrayData ;

```

×

Get JSON Object

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

```
# JSONSetElement ( "" ;  
  [ "type" ; "PhoneNumbers" ; 1 ] ;  
  [ "id" ; "A3278D0B-CD6D-477D-9478-DF79E49B2BB6" ; 1 ]  
  )  
  
# {"id":"A3278D0B-CD6D-477D-9478-DF79E49B2BB6","type":"PhoneNumbers"}  
  
Set Variable [ $param ; Value: Get(ScriptParameter) ]  
If [ 0 ]  
    Set Variable [ $param ;  
        Value: JSONSetElement ( "" ; [ "type" ; "PhoneNumbers" ; 1 ] ; [ "id" ; "A3278D0B-CD6D-477D-9478-DF79E49B2BB6"...  ]  
    ]  
End If  
  
Set Variable [ $type ; Value: JSONGetElement ( $param ; "type" ) ]  
Set Variable [ $id ; Value: JSONGetElement ( $param ; "id" ) ]  
  
Set Variable [ $json ;  
    Value: ExecuteSQL ( "SELECT JsonDataObject_c FROM " & $type & " WHERE PrimaryKey = ?" ; "" ; "" ; $id ) ]  
  
Exit Script [ Text Result: $json ]
```

"Set Variable" Options

Names prefixed by "\$" are local variables available only within the current script. Prefix the
throughout the current file (global).

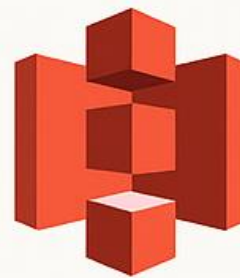
Name:

\$param

Value:

```
JSONSetElement ( "" ;  
[ "type" ; "PhoneNumbers" ; 1 ] ;  
[ "id" ; "A3278D0B-CD6D-477D-9478-DF79E49B2BB6" ; 1 ]  
)
```


DEMO



**S3
Bucket**



Contacts

2A8E05F1-4698
4F31-9371-
653D4FEC8A5.json



Address

4D618B73-2111-4964-80E1-
A6A241468D31.json

BECB1518-D326-4EB6-8A51-
7E73C107D513.json

4370702B-1627-416B-9372-
A43C77084B68.json

4881799D-4166-41DA-927C-
E79F440A9404D.json



Phone

S3 Lifecycle Policies

Transition to Glacier
After 60 days



Delete
After 7 years



Archival storage

Layout: WebView...onfigTable ▾

View As:   

Preview

JsonConfig {
 "Addresses" : "Type\rAddress Line 1\rCity\rPostal Code",
 "EmailAddresses" : "Type\rAddress",
 "PhoneNumbers" : "Type\rNumber"
}

TableName	DeleteAfterDays	Related
Contact	600	<input type="checkbox"/>
Address	300	<input checked="" type="checkbox"/>
<input type="text" value="Phone"/>	<input type="text" value="300"/>	<input checked="" type="checkbox"/>

[Restore](#)

Company:
Gekko&CoLLC

ModificationTimestamp:
4/25/2025 9:45:55 AM

ModifiedBy:
admin

Name:
Olle Lundström-Karlsson

PrimaryKey:
197

Website:
www.engageu.eu

tableName:
Contacts

Addresses

EmailAddresses

PhoneNumbers

JSON

**Type****Address**

Work

pidxebjeuz@wwijz.no

Personal

something@email.com

Personal

email2@email.com

Summary

Summary

Improved performance

Cheaper storage

Easier scaling

Compliance

Q&A