

## Version 1.0

# **Introduction Manual**

March 2017

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## What can you do with K4?

K4 allows you to leverage all the flexibility of spreadsheets inside QlikView and Qlik Sense. Using an Excel<sup>©</sup> file as a template, keeping all the formulas and the formatting, K4 dynamically fetches data from Qlik dataset and SQL live queries to populate the Excel template.



You can, for example, use K4 to manage a simple Profit&Loss statement with amazing speed and simplicity: just build the template in Excel, link cells to data and use it inside Qlik, users are not required to have MS Excel installed.

And it doesn't stop here ... you can even enter data, text, date, checkbox and drop lists in K4, saving on the fly to a SQL database!

] [→ [_⊗ Year 2015	$\bigotimes \frac{Month}{\theta 1}$	S A	Division	S version budget	8		
imple P&L							
&L : Division A - 2015, budget	version						
a 🗈 🖺							
P&L accounts - Division A	Actual	Budget	Budget - Actual	Variance %	Note		Status
Gross Sales	\$ 824,826	\$ 1,000,007	\$ 175,181	-17,5%	To be updated after new consolidation.	•	on hold
Sales Return	\$ (29,005)	\$ (30,005)	\$ -1,000	-3,3%			on hold
SubTotal	\$ 795,821	\$ 970,002	\$ 174,181	-18,0%			
Off Invoice Discounts	\$ (45,575)	\$ (45,575)	\$ -	0,0%			rejected
Sales Promotions	\$ (176,489)	\$ (176,489)	\$-	0,0%			input
NET SALES	\$ 573,757	\$ 747,938	\$174,181	-23,3%			
	70%	75%					
Cost of Sales	\$ (428,540)	\$ (428,540)	\$ -	0,0%	COGS 2013		
Warehousing	\$ (46,189)	\$ (46,189)	\$ -	0,0%			
Freight & Delivery	\$ (23,744)	\$ (23,744)	\$ -	0,0%			
TOTAL COST OF SALES	\$ -498,473	\$ -498,473	\$ -	5-			
	-60%	-50%		·····			
GROSS MARGIN	\$ 75,284	\$ 249,465	\$ 174,181	-69,8%		*****	
Selling Expenses	\$ (215,000)	\$ (220,000)	\$ -5,000	-2,3%		: 🗆 :	
General & Administrative	\$ (176,522)	\$ (176,522)	\$ -	0,0%			
TOTAL OPERATING EXPENSES	\$ -391,522	\$-396,522	\$ -5,000	-1.3%			
	-47%	-40%	7 0,000	_,070			
OPERATING INCOME	\$ -316,238	\$ -147,057	\$ 169,181	115,0%			
	-38%	-15%					
Non-Operating Expenses	\$ (7,075)	\$ (7,075)	\$ -	0,0%			
NET INCOME (LOSS)	\$ -323,313	\$ -154,132		109,8%			

In a very simple way you can **lock data** (disable the data-entry) on a cell-by-cell basis through a Qlik or a SQL expression: you can display actual data for closed month and editable cells for planning months. The locking logic can be as complex as you need: taking into account for example the current date versus the planning calendar and the current user versus the hierarchies.

You can manage a **distributed planning process** with multiple users entering data in a common database with full control thanks to K4 *Audit Trails* feature.

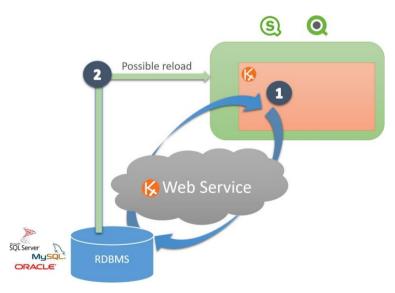
K4 does not come with a predefined business model, you can use it to build exactly the application you need.

## How does K4 work?

The K4 solution is made of two components: the Qlik extension object and the web service. The extension object loads data dynamically from one or several Qlik datasets or one or several SQL queries and merges them into an Excel file used as a template.



If K4 is configured for data-entry, when the user hits *Save* the new/changed data is sent to the web service which takes care of writing them in a *table* in a relational database. The data is then read back on-the-fly from the SQL database when the object is refreshed. (and eventually loaded back into Qlik with a reload).



You can use the K4 object in a document opened with the browser (AJAX client) from the Qlik access point or opened with the Desktop client (in QlikView in *WebView* mode). MS Excel is not required on the clients.

K4 uses its web service for write-back. The web service receives from the K4 object the new/changed data together with the Qlik document current selection and the user id: it compares these data with the structure of the buffer table to check that it has all the information (e.g. primary keys) it needs to create/update records in the buffer table.

## What are the development steps?

The best way to match the application specification is first of all to mockup the K4 layout using an Excel document. The mockup will help to identify:

- Which cells receive Qlik data
- Which Data Entry cells will need buffer tables to store the saved data
- The current selection effect in the grid: filtering and providing keys to drive cells values.

Next steps are natural:

- You can use an existing database (if MS SQL, Oracle or MySQL) to host the buffer tables, with, as a best practice, a dedicated schema. Otherwise create the database: create the security, then the buffer tables and views and maybe triggers.
- Install K4 Analytics server that will run the web services between the document and the database.
- Install the K4 Analytics extension into the Qlik Desktop, ready for object edit mode.
- Add the K4 object in the QlikView or Sense document and set the properties in 3 steps:
  - 1. Create the Qlik datasets (optional)
  - 2. Create the SQL datasets
  - 3. Create the template, using Excel format (and may be leveraging the mockup!)
- Publish the template on the server, using the template manager. After having also installed the K4 extension on the Qlik server, all the users can access the Qlik document with live and shared data in the K4 Analytics extension.

### Workflow process overview

Data Model	K4 extension	Datasets	Worksheet
1 – Worksheet mockup			
Data specifications	Install K4 Analytics server		
Qlik data (read only)	Install the K4 extension		
Data entry specifications	Drop K4 object in the Qlik document		Create the Excel template
Create the buffer tables Database	<ul> <li>Settings properties</li> </ul>		Create the Excel template
Create buffer Tables & Views		Set the Qlik Dataset(s) properties	
		Set the SQL Dataset(s) properties	
			Connect Cells and Datasets - KGET()
			Publish template on server
	Worksheet propertie	s :	connect the Excel template
	K	K	×I

## Preparing the buffer tables

#### Create or open the Database

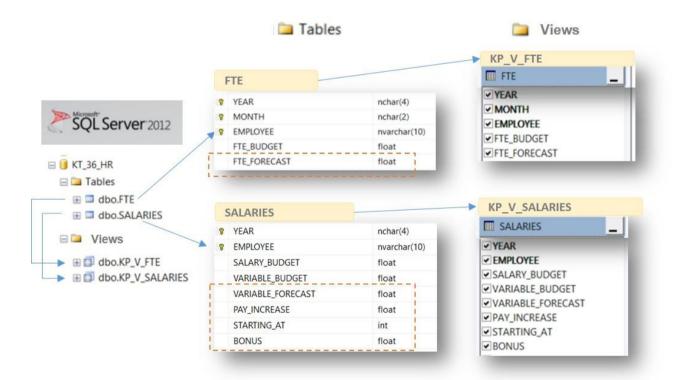
- Create a database (or restore from the K4 demos)
- Create the security (user, membership settings)
- Create the connection string to be stored at server level, in the \App\_Data\connections folder.

#### Create the buffer table(s)

- Create the table(s)
- Create the primary keys:
  - reflecting the current selection affecting the data
  - considering the cell location in the Excel template (e.g. month column)
  - o adding optional information, using the Context property.
- Create the measure fields for data entry or display only (format compatible with the template cell format)

#### *Create the view(s), mandatory*

• Each buffer table requires a view, named with the 'kp\_v\_' prefix + table name. Why? This will open further possibilities, leveraging join when useful. The K4 extension always queries the views.



### **Basic settings**

#### Add the K4 extension in the Qlik document

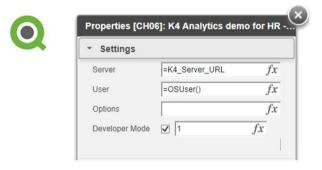
Once the K4 extension is installed in the Qlik Desktop, it will appear in the Extensions list. Simply drag & drop K4 in your Qlik application, ready to set the K4 properties like with any standard Qlik objects.

Ne	ew Sh	eet Object	
×	Qlik	View Objects	
*	Exte	nsion Objects	
$\Phi$	(3)	K4 Analytics	K4 Analytics version 1.0.1



#### Set the basic Settings

- Open the K4 Object properties (Right Click in QlikView, Edit Mode in Sense)
- Connect to the K4 Server using the URL address



K4 Settings		S
<ul> <li>Settings</li> </ul>		
Server		
=K4_Server_URL	fx	
Show Condition		
=if(getselectedcount(Year)=1	fx	
User		
=replace(replace(OSUser(),';	fx	

## The three K4 steps overview

After the software installation and once the K4 object is connected to the K4 web services, it is time to design the user-interface and connect cells to data, ready for cells Data Entry and Smart Data Entry.

Filtered by the current selection, Qlik data and SQL data need to be loaded in virtual Datasets (steps 1 and 2). In the Excel template, the KGET() formula allows to read and write between a cell and a Dataset (step 3). When users Save in the K4 toolbar, K4 writes back from the virtual Datasets to the SQL buffer tables.



#### 1 -Create the Qlik datasets

If the worksheet needs to display or leverage data from the Qlik document, as you would do to build a pivot table, create one or many QlikView or Qlik Sense datasets. You need to set a name (free) to identify each Qlik Dataset.



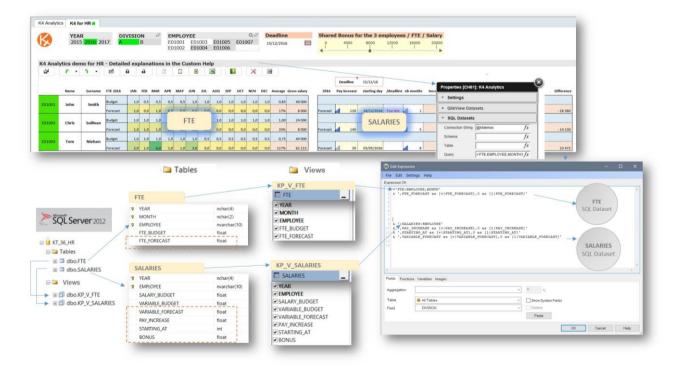


#### 2 - Create the SQL datasets

Cells of the worksheet designed for data entry or display from data in tables (dedicated buffer tables or existing SQL tables) require one or several SQL Datasets. Each SQL Dataset name matches the buffer table name.

	K4 Settings					Properties [CH61	]: K4 Analytics	<u> </u>
	Qlik Sense Datasets			/		* Settings		
	SQL Datasets		SQL			QlikView Data	sets	
			Datasets			* SQL Datasets		
~	<ul> <li>SQL Settings</li> </ul>					Connection String	=vkConnectionString $fx$	
	<ul> <li>Query Settings</li> </ul>					Schema	fx	
	Query					Table	fx	
	='PnL_Budget:ReportingCode, Jx					Precision	fx fx	
	•	Champs				Query	= 'PnL_Budget ReportingCod fx	
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3 6 ', no	otes as [vinotes],0 as [linotes]' tatus as [vistatus],0 as [listatus]'	Champ		1 = 'PnL Budget:	ReportingCode,'			
5 & ',c)	hecked as [v(checked],0 as [l)checked]'	Actual	•	3 & ', notes as [	<pre>[v Budget], case when [v notes],0 as [1 note [v status],0 as [1 status]</pre>	·=]'	then -1 else 0 end as [1]	Budget
		Pas d'agrégation	•	5 & ', checked as	[v[checked],0 as [1]s	checked]'		
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) OK		Insérer		Fields Functions Va Aggregation Table	All Tobles		✓ Show System Fields	

The schema below shows how to create the two SQL datasets used in the same HR template:



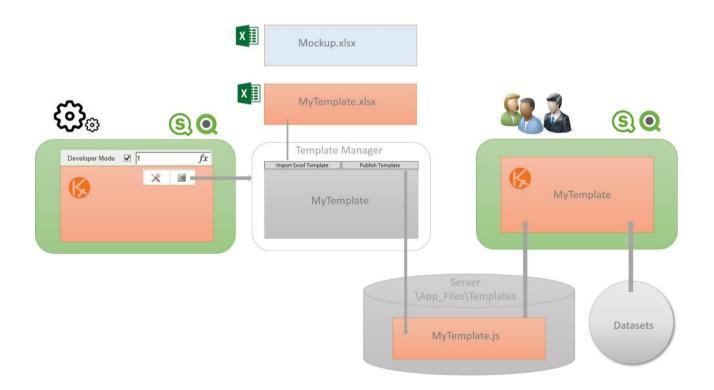


#### 3 -Create the template

The K4 worksheet layout is based on a Excel file (MyTemplate.xlsx). This file probably gets inspiration from the initial mockup and will include additional information before making it live in the Qlik document:

- Dynamic row field identifier if the grid is not static (\* to start the row block, \*\* to end). The P&L demo shows a static grid while the HR and Sales budgeting demos are using dynamic row fields (Employees and Products) to populate the rows.
- Link between cells and data in the Qlik and SQL Datasets: using the KGET() formula.
- Totals management leveraging the KCELLSUM() formula.
- Conditional formatting
- Validation rules
- Excel hidden rows/columns
- Dynamic Row/Columns hiding

When the Excel template is ready, the template manager will save MyTemplate.xlsx in .js format and publish it on the server (specific location in the \App\_Files\Templates folder).



Modifying the template follows the same process. Then, the developer will be able to add a new column with totals or modify some color coding or change Excel calculations in the layout can be set in few minutes. When published, the modified application is immediately available to all users



#### Templates with static rows:

In the Excel template, each cell can directly 'grab' data from the dataset(s) using the KGET function.

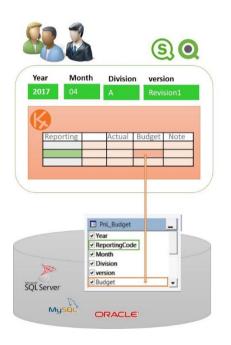
In the P&L model below, the Budget cells are designed for data entry, to be saved in the Budget field of the PnL\_Budget table. Each Budget cell refers to primary keys:

- Year, Month, Division and version that are driven by the current selection
- Reporting code, identified by the cell row in the grid

The KGET() formula in the Budget cell needs to know which table, which field and which reporting code.

The K4 web service will save the Budget cell value in the table, knowing the primary keys from the KGET() information + the current selection and updating the record in the buffer table.

*NB:* when the table record does not exist yet, K4 needs additional information to create it record in the buffer table, using the **Virtual Records** property in the SQL Datasets properties.

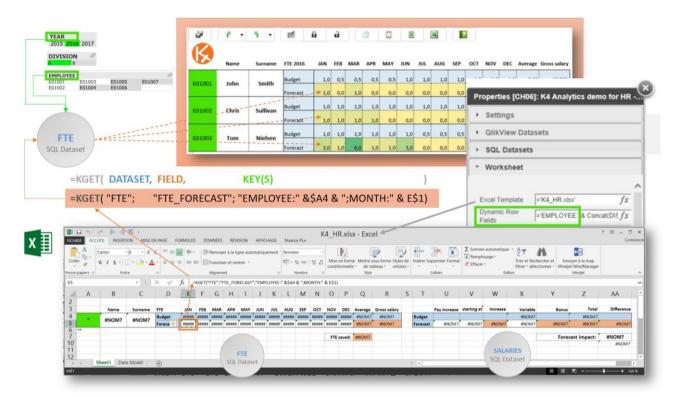


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	=KGE	T("PnL_Budge			ode:" & A3
A					ode:" & A3
A	<b>=KGE</b>	T("PnL_Budge			ode:" & A3

#### Templates with dynamic rows:

As shown in the HR demo it is possible to manage dynamic grids, filtered by the current selection. In this example, selecting a Division will provide a list of employees. Each employee in the grid will get 2 rows. In the template, you just need to describe the cells for 1 employee. It can be 1 or more rows, starting at the \* cell, representing the Employee key ID, and ending before the \*\* cell.

In the application, the Employee block (2 rows) will be replicated for every selected employees.



When the grid has to display a dynamic list of rows, filtered by the Qlik current selection, you have to specify which Qlik dimension will filter the rows in the *Dynamic Row Fields* property in the *Worksheet* properties. The KGET() formula will point the \* cell as a primary key.

Each dataset has a name and a number of measures: these are referenced in the cell formula using the *KGET()* function.

This technique is extremely powerful and flexible at the same time:

- The different datasets may have different *granularities* (i.e. keys or dimensions). In the same template you could, for example, combine monthly and yearly data.
- If the user changes data in different datasets, when he/she saves, data is updated in the different tables at the same time.
- Since each cell has all the information to save back to the SQL database, you have the maximum freedom in placing cells in the template layout.
- It is also possible to save back to the SQL database the calculation of an Excel formula.

## K4 Analytics: demos overview

K4 official demos are available for presentation, evaluation and training. Each of them are available in both QlikView and Sense format, sharing the same demo database and Excel templates.

They are provided to highlight diversity of the business application scopes and to showcase most of the K4 features in QlikView and Sense. These demos show a lot of best practices that hopefully will stimulate developers' imagination.

## Profit & Loss (P&L)

This simple P&L displays Actuals and Budget data. The user can input new budget monthly values, notes and workflow information. The Excel formulas in the template immediately calculate and display the difference and the variance.

<b>્ર Year</b> ા	Month	P&L	* 🗃						(
2015 🛩	01 v								
2013	02	P&L accounts - Division A	Actual	Budget	Budget - Actual	Variance %	Note		Status
2014	03	Gross Sales	\$ 824,826	\$ 1,000,001	\$ 175,175	-17,5%	To be updated after new consolidation.	•	on hold 🔻
2016	04	Sales Return	\$ (29,005)	\$ (30,005)	\$ -1,000	-3,3%			on hold 🔻
		SubTotal	\$ 795,821	\$ 969,996	\$ 174,175	-18,0%			
	05	Off Invoice Discounts	\$ (45,575)	\$ (45,575)	\$ -	0,0%			rejected 🔻
2, version	06	Sales Promotions	\$ (176,489)	\$ (176,489)	\$-	0,0%		Ī	
oudget 🗸	07	NET SALES	\$ 573,757	\$ 747,932	\$ 174,175	-23,3%			
		Cost of Sales	70% \$ (428,540)	75% \$ (428,540)	s -	0,0%	COGS 2013		
revision1	08	Warehousing	\$ (46,189)	\$ (46,189)	\$-	0,0%	0032013		
revision2	09	Freight & Delivery	\$ (23,744)	\$ (23,744)	\$-	0.0%			
	10	TOTAL COST OF SALES	\$ -498,473	\$ -498,473	\$-	\$-			
Q Division	10		-60%	-50%	*				
- Division	11	GROSS MARGIN	\$ 75,284	\$ 249,459	\$ 174,175	-69,8%			
Α	12	Selling Expenses	\$ (215,000)	\$ (220,000)	\$ -5,000	-2,3%			۲
		General & Administrative	\$ (176,522)	\$ (176,522)	\$ -	0,0%			•
В		TOTAL OPERATING EXPENSES	\$-391,522	\$-396,522	\$ -5,000	-1,3%			
			-47%	-40%					
		OPERATING INCOME	\$ -316,238	\$ -147,063	\$ 169,175	115,0%			
			-38%	-15%					
		Non-Operating Expenses	\$ (7,075)	\$ (7,075)	\$-	0,0%			•
		NET INCOME (LOSS)	\$ -323,313	\$ -154,138		109,8%			

This demo highlights different types of data entry (the yellow columns)

- Data (Budget)
- Text (Notes)
- Checkbox
- List (workflow status)

The Actuals (blue column) are data provided by the Qlik document and the Budget-Actual and Variance columns are calculated by Excel formulas.

The grid is filtered by the current selection (Fiscal Year, Version, Division and Month).

When a Reporting row has an "Approved" status (right column), the Budget data entry is locked.

In the K4 toolbar, the Save icon writes back the inputted data. There is also a grid export to Excel.

## Sales budgeting

This Sales Budgeting demo is based on a security model by Users and Roles. There are 4 topics in this application, controlled by the user role:

- Budget input (data and cell notes), with a Sales base.
- Over-Assignment by the Manager
- Workflow, approval process
- Reforecast, knowing the Actuals (the Manager only can lock months to Actual).

#### Budget input:

This sheet offers Budget Data Entry by cell and Smart Data Entry by group of cells:

- Fiscal year budget cells to input (yellow cells)
- Selectable year Sales, read only (blue cells),
- Actual months automatically locked (grey cells no data-entry)

nalytics Dashboard	K4 Smart Data Entry K4	Triggers Vers	ions Roadmap													
i - Manager	🛞 2015 Bi	udget (r	evision1	) vs 20	)14 Sal	es					<b>lonth</b> 01 02 03 04	05 06 07 08	09 10 11 1	a We	inager layouts dget vs Actual er-Assignment irkFlow forecast	
2	≡ • ∰ ₹ ·	- 5 - 1	1 0 d	13 0			× B	l								
	Selected Sale	s Year: 2014	\$ 35,466,686	\$ 2,781,192	\$ 2,828,649	\$ 2,883,687	\$ 2,889,454	\$ 3,064,260	\$ 2,681,960	\$ 2,673,045	\$ 793,224	\$ 2,960,001	\$ 2,960,831	\$ 4,612,035	\$ 4,338,348	<b>^</b>
2014 2015 2016	Total	Budget	\$ 35,083,883	\$ 3,115,500	\$ 3,245,041	\$ 3,375,440	\$ 2,915,601	\$ 3,252,379	\$ 3,484,524	\$ 2,822,727	\$ 914,524	\$ 2,353,969	\$ 2,422,963	\$ 4,063,332	\$ 3,117,883	
n Q	Total	(B-A)	\$ -382,803	\$ 334,308	\$ 416,392	\$ 491,753	\$ 26,147	\$ 188,119	\$ 802,564	\$ 149,682	\$ 121,300	\$ -606,032	\$ -537,868	\$ -548,703	\$ -1,220,465	
1		2015		January	February	March	April	May	June	July	August	September	October	November	December	
2	802	2014 Sales	\$ 1,360,049	122 031	122 363	125 907	263 265	111 106		252 763			116 500	119 715	126 399	
e	Aero Storm	2015 Budget	\$ 1,479,385	110 000	153 854	156 279	150 578	143 265	150 000	252 763	12	20	116 500	119 715	126 399	155
	803	2014 Sales	\$ 1,722			1 722										
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(2) Aero	B04	2014 Sales	\$ 622,814	45 245	46 399	47 769	118 503	48 341		114 529		8 664	59 580	47 658	86 126	
Pure Drive Pure Storm	Pure Drive GT	2015 Budget	\$ 430,353	39 380	57 744	79 175	135 378	55 225		61 451				1 000	1 000	
/OUTEK /licroGel	B05	2014 Sales	\$ 314,112	11 819	20 743	5 969	34 015	36 345		58 225		19 057	29 552	36 974	61 413	
BLX K Factor	Pure Drive Roddick GT	2015 Budget	\$ 115,477	16 304	26 794	9 888	15 123	26 859	20 509							
	806	2014 Sales	\$ 2,533,238	208 039	217 072	212 395	330 256	296 987		410 536		207 507	191 502	185 917	273 027	
t Q@	Pure Drive 107 GT	2015 Budget	\$ 2,553,879	249 646	264 981	286 058	236 302	279 862	237 030	500 000	100 000	400 000				
Team GT	807	2014 Sales	\$ 463,453	31 158	38 845	41 500	35 324	46 267	42 547	64 171		37 893	34 913	15 691	75 144	
One 95 16x18	Pure Drive Lite GT	2015 Budget	\$ 289,787	35 246	43 941	68 785	40 354	52 855	48 606							
One Tour mpest Four	808	2014 Sales	\$ 439,427	22 010	30 392	20 712	18 867	30 381	39 371	79 681		35 663	49 271	53 680	59 399	
KFour he 95	Pure Storm GT	2015 Budget	\$ 278,972	24 898	34 379	23 429	21 554	34 707	44 977	91 028		1 000	1 000	1 000	1 000	
fical Midplus fical Oversize	B09	2014 Sales	\$ 2,066,958	161 383	176 144	184 394	192 677	162 532	152 937	321 693	25 165	165 593	156 024	174 033	194 383	
ive 107 GT	Pure Storm Tour Plus GT	2015 Budget	\$ 1,571,152	182 556	199 254	208 586	220 114	185 677	174 715	367 502	28 748	1 000	1 000	1 000	1 000	
ive Lite GT	B10	2014 Sales	\$ 1,680,517	106 106	125 403	115 713	155 196	150 190	146 799	126 443	122 054	153 452	158 409	129 399	191 353	
orm GT orm Team GT	Pure Storm Team GT	2015 Budget	\$ 1,378,977	120 027	141 856	130 895	177 296	171 577	167 703	144 448	139 434	1 000	182 741	1 000	1 000	
orm Tour Plus Extreme MP	H01	2014 Sales	\$ 1,402,904	146 319	104 478	67 870	43 203	127 882	104 020	148 675	129 550	126 943	90 169	132 961	180 834	
Extreme Pro Speed 16x19	YTK IG Speed 16x19	2015 Budget	\$ 967,871	146 319	104 478	67 870	43 203	127 882	104 020	148 675	129 550	1 000	92 874	1 000	1 000	
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The K4 menu handles Qlik variables. The dynamic properties leverage the Qlik variables to determine the display. Here you can select the Sales year to display, show/hide specific rows/columns, etc.

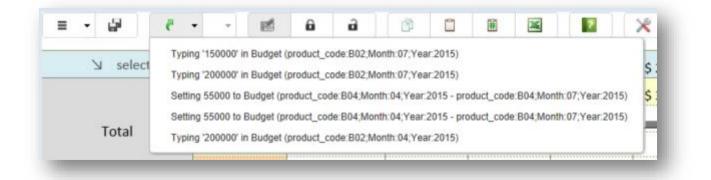
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Display mode Compact	ed Sale	s Year: 2015	\$ 19,577,892	\$ 2,752,440	\$ 2,868,818	\$ 2,872,406	\$ 2,717,073	\$ 3,001,566	\$ 2,688,078	\$ 2,676,389	\$ 1,122	
🖌 All		Budget	\$ 51,217,875	\$ 3,688,284	\$ 3,201,581	\$ 3,266,612	\$ 3,230,486	\$ 3,495,554	\$ 3,076,980	\$ 3,048,665	\$ 914,511	\$ 13
SALES YEAR			Budget>Sales									
2014			Sales <budget< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></budget<>									
✓ 2015		(B-A)	\$ 31,639,983	\$ 935,844	\$ 332,763	\$ 394,206	\$ 513,413	\$ 493,988	\$ 388,902	\$ 372,276	\$ 913,389	
LEVEL Brand			Months closed	•	2	2						
Line		2015		January	February	March	April	May	June	July	August	Sej
<ul> <li>Product</li> </ul>		2015 Sales	\$ 844,650	114 812	128 212	130 233	125 482	119 388	127 740	98 783		
Refresh the rules	Storm	2015 Budge	\$ 11,549,015	10 000	138 417	142 425	300 753	126 927		300 000	100 000	10

Open the Smart Data Entry panel, freeze cells you do not want to modify and select different actions for the selected cells (e.g. copy Sales in the Budget cells with a growth factor, add a shared comment to different cells, set the cells total accordingly to the existing distribution or apply an allocation driver...)

Measure Total	Locked	d Hel	d	New	Cell Value	opy from			New	Total
Budget 2532230	.00	0.00 242	182.00 Set 0	Cells =	( []	opy from 1,2			Total =	
2015 1958667	00						Review	red		
Sales										
Notes 21 C	ells   0	cells	0 cells Set 0	Cells =						
Selected Sale	s Year: 2015	\$ 19,577,892	\$ 2,752,440	\$ 2,868,818	\$ 2,872,406	\$ 2,717,073	\$ 3,001,566	\$ 2,688,078	\$ 2,676,389	\$ 1,122
Total	Budget	\$ 40,362,202	\$ 3,123,790	\$ 3,185,877	\$ 3,251,340	\$ 3,207,065	\$ 3,477,558	\$ 3,069,194	\$ 3,007,790	\$ 811,507
TOCAL	(B-A)	\$ 20,784,310	\$ 371,350	\$ 317,059	\$ 378,934	\$ 489,992	\$ 475,992	\$ 381,116	\$ 331,401	\$ 810,385
	2015		January	February	March	April	May	June	July	August
02	2015 Sales	\$ 844,650	114 812	128 212	130 233	125 482	119 388	127 740	98 783	
Aero Storm	2015 Budget	\$ 1,537,859	135 576	135 945	139 882	295 383	124 660		283 688	
03	2015 Sales	\$ 3,04 1			3 041					
AeroPro Team GT	2015 Budget	\$ 1,9 <mark>:</mark> 3			1 913	•	•			
04	2015 Sales	\$ 366,1:2	32 817	48 120	53 357	60 293	62 884	47 190	61 451	
Pure Drive GT	2015 Budget	\$ 699,317	50 267	51 549	53 071	132 960	54 238		128 501	
05	2015 Sales	\$ 111,510	13 587	22 329	8 240	12 603	22 383	17 091	15 347	
Pure Drive Roddick GT	2015 Budget	\$ 353,4:1	13 130	23 045	6 631	38 164	40 779		65 328	
06	2015 Sales	\$ 1,477,9 <mark>:</mark> 4	208 039	220 818	238 382	196 919	233 219	197 525	183 032	
Pure Drive 107 GT	2015 Budget	\$ 2,842,4:9	231 131	241 166	235 970	370 547	333 219		460 621	
07	2015 Sales	\$ 279,728	34 975	35 540	36 688	30 535	41 152	43 947	56 891	
Pure Drive Lite GT	2015 Rudget	\$ 520 144	34 616	43 156	46 106	30 633	51 911	47 737	71 999	

After several entries, until a final Save, you can Undo/Redo the previous actions:

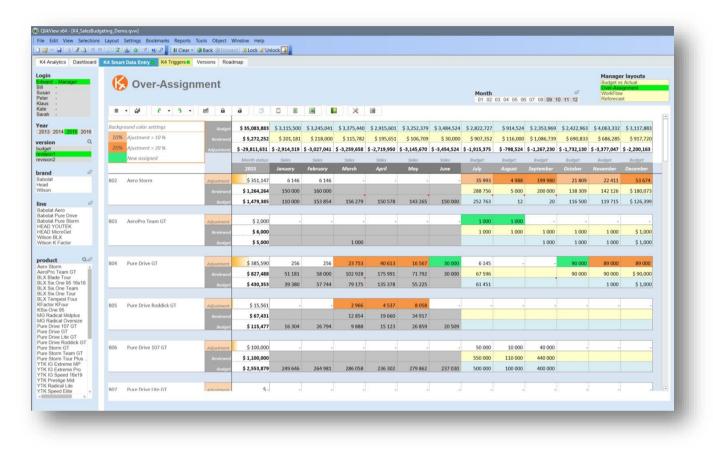
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#### **Over-Assignment:**

This layout is available only for Users having the Manager role. Budget values may be over-assigned. Then the adjustment is displayed.

Adjustment cells are color-coded (thanks to Excel conditional formatting rules) accordingly to preset thresholds. The user can modify the thresholds to visually highlight the adjustment weight.



After Over-assignment inputs, a compact display will give a clear overview of the adjustments. This layout can be exported in an Excel file or shown in different QlikView or Sense documents. E.g. the manager will send to the brand manager for his brands.

ackar	ound color settings	Budget	\$ 39,025,681	\$ 2,990,214	\$ 3,185,877	\$ 3,113,145	\$ 2 015 482	\$ 3,358,298	\$ 3,074,094	\$ 2,730,790	\$ 817,707	\$ 3,349,656	\$ 3 308 660	\$ 5,290,421	\$ 4 801 33
	Ajustment > 10 %	Buaget Reviewed	\$ 39,023,881 \$ 201,370								\$ 6,500				
20%	Ajustment > 20 %	Adjustment	\$ -38,824,311	\$ -2,935,933	\$ -3,182,677	\$ -3,106,645	\$ -2,911,282	\$ -3,353,398	\$-3,071,094	\$ -2,724,790	\$-811,207	\$ -3,342,656	\$-3,301,160	\$-5,282,421	\$ -4,801,048
	New assigned		Month status:	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget
302	Aero Storm	Adjustment	\$ -133,045	100	- 133 745	300	200	100	-	-	-	-	-	-	
03	AeroPro Team GT	Adjustment	\$ 17,800	1 000	1 000	2 600	200	- 600	600	2 000	3 000	2 000	2 000	2 000	2 000
04	Pure Drive GT	Adjustment	\$ 914	914	-	-	-	-	-	-	-	-	-	-	
05	Pure Drive Roddick GT	Adjustment	\$-	-	-	-	-	-	-	-	-	-	-	-	
06	Pure Drive 107 GT	Adjustment	\$ -	-	-	-	-	-	-	-	-	-	-	-	
)7	Pure Drive Lite GT	Adjustment	\$-	-	-	-	-	-	-	-	-	-	-	-	
08	Pure Storm GT	Adjustment	\$ -	_	_		-		-	_				_	



#### Workflow, basic approval process

This a basic example of what could be explored with K4 features. Based on a Status drop list (input, submitted, rejected, approved), each budget cell status can be edited.

	_					D UNIOCK	5											-
Analytics Dashboard	K4 Smart	Data Entry 🗧 K4 T	riggers Ve	rsions Roa	dmap													
in ard - Manager an - rr - rs -	K	WorkFlo	w										Moni 01		06 07 08	Ø 09 10 11 12	Manager layouts Budget vs Actual Over-Assignment WorkFlow Reforecast	
h -	=	· 5 B ·	5 -	ef 8	a	9		2	× 8	đ								
		Actual	\$ 19,577,892	\$ 2,752,440	\$ 2,868,818	\$ 2,872,406	\$ 2,717,073	\$ 3,001,566	\$ 2,688,078	\$ 2,676,389	\$ 1,122	\$-	\$-	\$-	ş			
3 2014 2015 2016	Total	Budget	\$ 35,083,883	\$ 3,115,500	\$ 3,245,041	\$ 3,375,440	\$ 2,915,601	\$ 3,252,379	\$ 3,484,524	\$ 2,822,727	\$ 914,524	\$ 2,353,969	\$ 2,422,963	\$ 4,063,332	\$ 3,117,883			
on Q		(B-A)	\$ 15,505,991	\$ 363,060	\$ 376,223	\$ 503,034	\$ 198,528	\$ 250,813	\$ 796,446	\$ 146,338	\$ 913,402							
t n1			2015	January	February	March	April	May	June	July	August	September	October	November	December			
n2	802	Aero Storm	\$ 1,479,385		153 854	156 279		143 265	150 000	252 763	12	20	116 500	119 715	126 399			
<b>1</b> @			VorkFlow Status	approved *		approved *				submitted *	submitted *	submitted *	input *	input *	input *			
at		Actual total	\$ 844,650		128 212	130 233		119 388	127 740	98 783								
1	-	Budget - Actual	\$ 1,479,385	- 4 812	25 642	26 046		23 877	22 260	153 980	12	20	116 500	119 715	126 399			
0	803	AeroPro Team GT	\$ 5,000			1 000						1 000	1 000	1 000	1 000			
at Aero			VorkFlow Status	approved *	approved *		approved *	approved *	approved *	submitted *	submitted *	submitted *	input *	input *	input *			
at Pure Drive at Pure Storm		Actual total	\$ 3,041			3 041												
YOUTEK	B04	Budget - Actual				- 2 041						1 000	1 000	1 000	1 000			
n BLX n K Factor	0.04		\$ 430,353 Vorkflow Status	39 380 approved *	57 744 approved *	79 175	135 378 approved *		approved *	61 451 submitted *	submitted *	submitted *	input *	1 000	1 000			
		Actual total	\$ 366,112		48 120	53 357	60 293	62 884	47 190	61 451	Jubinitieu	Jubinitted	niput	mput	mput			
uct Q.@		Budget - Actual		6 563	9 624	25 818		- 7 659	- 47 190	01431				1 000	1 000			
Storm Pro Team GT	805	Pure Drive Roddick GT	\$ 115,477	16 304	26 794	9 888		26 859	20 509					1000	1000			
Blade Tour Six.One 95 16x18		L.	VorkFlow Status	approved *		approved *				submitted *	submitted *	submitted *	input *	input *	input *			
Six.One Team		Actual total	\$ 111,580	13 587	22 329	8 240	12 603	22 383	17 091	15 347								
Six.One Tour empest Four		Budget - Actual	\$ 115,477	2 717	4 465	1 648		4 476	3 418	- 15 347								
or KFour One 95	B06	Pure Drive 107 GT	\$ 2,553,879	249 646	264 981	286 058	236 302	279 862	237 030	500 000	100 000	400 000						
adical Midplus adical Oversize		u	VorkFlow Status	approved *	approved *	approved *	approved *	approved *	approved *	submitted *	submitted *	submitted *	input 🔻	input 🔻	input *			
Drive 107 GT		Actual total	\$ 1,477,934	208 039	220 818	238 382	196 919	233 219	197 525	183 032								
Drive Lite GT		Budget - Actual	\$ 2,553,879	41 607	44 163	47 676	39 383	46 643	39 505	316 968	100 000	400 000	-	-	-			
Drive Roddick GT Storm GT	807	Pure Drive Lite GT	\$ 289,787	35 246	43 941	68 785	40 354	52 855	48 606									
Storm Team GT Storm Tour Plus		u	VorkFlow Status	input *	input *	input *	input *	input *	input *	submitted *	submitted *	submitted *	input *	input *	input *			
G Extreme MP G Extreme Pro		Actual total	\$ 279,728	34 975	35 540	36 688	30 535	41 152	43 947	56 891								
G Speed 16x19		Budget - Actual	\$ 289,787	271	8 401	32 097	9 819	11 703	4 659	- 56 891				1				
Prestige Mid Radical Lite	BOS	Pure Storm GT	\$ 278,972	24 898	34 379	23 429	21 554	34 707	44 977	91 028		1 000	1 000	1 000	1 000			

Using the Smart Data Entry panel, you can change the workflow status by cell blocks (except for locked and held cells).

Using the triggered actions, you can reset all the cells to a specific status (e.g. all approved). This way breaks the grid limitations (approx. 10.000 cells in the current display) to unlimited number of cells in the budget version.

K4 Analytics Dashboar	d K4 Smart Data Entry
Login Edward - Manager Bill - Susan - Peter - Klaus - Kate - Sarah -	Global Actions at version level (manager role only) Triggering Server actions to improve performance at large data.
ear	Target versionSelect the actionwithSelect an a2015 - revision1status=selected version
2013 2014 2015 2016 arget version	input           Select which status in t         submitted         When save
evision2	approved rejected SQL server
	The scope and the pa

The cells status is stored in the SQL table, useful to lock data entry depending on business rules, or colorcoding the cells in different reports.

#### **Reforecast**

This is the most intuitive way to re-forecast a running budget in a full integrated layout where you can:

- Close months when actuals are available, automatically locking the input for Actual cells.
- Edit remaining months, by cell or global actions
- Immediately display the Actual + Forecast by product, line or brand, and totals
- Highlight where the forecast achieves the initial budget target
- Focus the reforecast display and cells input, leveraging the Qlik current selection.

		Settings Bookmarks Reports															
	_	🕍 🖈 📧 🥑 🖓 🖥 🕨 Clear •			Unlock												
nalytics Dashboard	K4 Sma	rt Data Entry K4 Triggers	Versions Road	map													
1 - Brand Mana	G	Reforecast 2	015 - (re	visio	n1)									Brand Ma Budget vs	anager lay Actual		
												10nth	4 05 06 07	08 09 10 1	1 12	WorkFlow	
1	1.0	- 2 - 5 -	ef O	a	9 🛛 🛢			28									
	-						-										
2014 2015 2016			REFORECAST														
n Q				Actual	\$ 4,531,379	\$ 704,153	\$ 780,685	\$ 789,888	\$ 722,925	\$ 794,247	\$ 739,481	\$ 721,584	\$-	ş	\$-	ş	\$
			\$ 7,179,140	Budget	\$ 2,647,761	778 057	922 803	964 095	996 699	950 027	843 540	1 417 192	268 194	404 020	302 241	124 715	131 399
2					Budget > Actual		_										
0				(B-A)	\$ -1,883,618	73 904	142 118	174 207	273 774	155 780	104 059		-	1	-		
								I	2		2						
			REFORECAST	2015	Total	Actual January	Actual February	Actual March	Actual April	Actual May	Actual June	Budget July	Budget August	Budget	Budget October	Budget November	Budget
a	_			Actual	\$ 745,867	114 812	128 212	130 233	125 482	119 388	127 740	98 783					
Aero	B02	Aero Storm	\$ 1,361,276	Budget	\$ 615,409	114 812	153 854	156 279	150 578	143 265	150 000	252 763	12	20	116 500	119 715	126 399
Pure Drive Pure Storm				Actual	\$ 3,041	110 000	155 054	3 041	130 370	145 205	150 000	252705	14	20	110 500	115715	120 333
/OUTEK /licroGel	B03	AeroPro Team GT	\$ 7,041	Budget	\$ 4,000			1 000						1 000	1 000	1 000	1 000
BLX K Factor				Actual	\$ 304,661	32 817	48 120	53 357	60 293	62 884	47 190	61 451					
	B04	Pure Drive GT	\$ 368,112	Budget	\$ 63,451	39 380	57 744	79 175	135 378	55 225		61 451		1		1 000	1 000
at Q.∂		5 10 1 1 10 10 10		Actual	\$ 96,233	13 587	22 329	8 240	12 603	22 383	17 091	15 347					
o Team GT	805	Pure Drive Roddick GT	\$ 96,233	Budget	\$-	16 304	26 794	9 888	15 123	26 859	20 509						
ive 107 GT ive GT	806	D	\$ 2,294,902	Actual	\$ 1,294,902	208 039	220 818	238 382	196 919	233 219	197 525	183 032					
ive Lite GT ive Roddick GT	BOG	Pure Drive 107 GT	\$ 2,294,902	Budget	\$ 1,000,000	249 646	264 981	286 058	236 302	279 862	237 030	500 000	100 000	400 000			
orm GT orm Team GT	B07	Pure Drive Lite GT	\$ 222.837	Actual	\$ 222,837	34 975	35 540	36 688	30 535	41 152	43 947	56 891					
orm Tour Plus D Drive GT		The bille ble of	V 111,007	Budget	\$-	35 246	43 941	68 785	40 354	52 855	48 606						
de Tour COne 95 16x18	808	Pure Storm GT	\$ 237,438	Actual	\$ 142,410	19 079	29 784	20 085	10 107	32 108	31 247	15 629					
One Team One Tour		A 505 518 (0) FO		Budget	\$ 95,028	24 898	34 379	23 429	21 554	34 707	44 977	91 028		1 000	1 000	1 000	1 000
mpest Four ur	B09	Pure Storm Tour Plus GT	\$ 1,404,836	Actual	\$ 1,004,586	166 093	163 855	175 284	161 504	157 403	180 447	160 621					
KFour 95		ana-ara-delati Ash-dalarangka m		Budget	\$ 400,250	182 556	199 254	208 586	220 114	185 677	174 715	367 502	28 748	1 000	1 000	1 000	1 000
	B10	Pure Storm Team GT	\$ 1,186,465	Actual	\$ 716,842	114 751	132 027	124 578	125 482	125 710	94 294	129 830					
ognizant	_			Budget	\$ 469,623	120 027	141 856	130 895	177 296	171 577	167 703	144 448	139 434	1 000	182 741	1 000	1 000

#### Select a compact display to report the new budget for the remaining months:

≡ • ∰	ē • 5 •	e 6	a (1		•	2	× 🖻	
<ul><li>Display mode</li><li>Compact</li></ul>		REFORECAST	July	August	September	October	November	December
AII		\$ 48,158,759 REFORECAST	3 048 665 July	914 511 August	13 354 663 September	3 452 560 October	5 436 800 November	5 051 179 December
Brand		\$ 11,576,360	300 000	100 000	10 000 000	138 308	142 125	150 060
Line V Product	n GT	\$ 3,542	500	1				
Refresh the rules	oddick GT	\$ 668,458 \$ 332,109	130 837 66 516		9 897 21 770	68 731 34 091	54 978 42 653	99 354 70 846
V Apply	)7 GT	\$ 2,751,305	468 996		237 055	220 916	214 473	314 963
B07 Pure Drive Li		\$ 484,495	73 308		43 288	40 275	18 101	86 686
B08 Pure Storm 0 B09 Pure Storm 1		\$ 461,464	91 027 367 502	28 748	40 741 189 173	56 839 179 989	61 925 200 764	68 522 224 240
B10 Pure Storm 1	Feam GT	\$ 1,728,785	144 448	139 434	175 303	182 740	149 274	224 240
H01 YTK IG Speed	16x19	\$ 1,394,139	148 675	129 550	126 943	92 874	136 949	186 259
H02 YTK IG Extrem	me Pro	\$ 3,472,913	292 958	186 735	355 244	300 466	284 027	428 793

## **Product forecast**

This Sense demo could be used by a sales rep on the field, using a connected tablet to forecast Sales by product. Data entry by Quantity and Unit Price.

Actual months are automatically locked.

The status makes Sales reps easily collaborate with the Team leader at the head-office. E.g. requesting an approval before setting a promotional unit price. The Notes field allows large text entry.

Year	₽	ĉ	- 5 -	D (		×	1		
20	015 🗸	Product I	B01						
20	014	- Todact 1							
20	016 /	Month	Quantity	Unit Price	Amount	Status		Notes	
version	L	an			_	input	•		
	F	eb				input	•		
	· ·	Vlar			-	input	•		
udget	4	Apr			-	input	•		
evision2	r	Vlay			-	input	•		
EVISION2		un			-	input	•		
	L	ul	28	90,00	2 520		۲		
() brand	4	Aug	26	100,00	2 600		•		
Babolat	S	iep	28	100,00		submitted	•	Please approve asap	
1000		Oct	31	100,00	3 100		•		
	r	Vov	34	100,00	3 300		•		
Vilson	E	Dec	36	100,00	3 600	input	۲		
	1	otal	182		17920,00				
् product_c		L							
B01	~	Quantity Av	verage	15,17					
		Quantity St		16,04					

If the tablet cannot be connected, the job can be achieved in an Excel sheet. When back online, the Smart Paste tool in the toolbar will easily import the Excel inputs in K4 in the Qlik document to be then saved in the database.

### Human resources (HR)

This demo manages employees FTE (Full Time Equivalent) by month and yearly pay increase, variable and bonus. The grid is filtered by Division to select the employees.

The user can input the FTE forecast by cells or use Smart Data Entry to copy from the initial FTE budget with a multiplier. The Gross Salary total is impacted by the FTE.

The pay increase is limited by a threshold set in the Qlik document.

The bonus calculation spreads the global bonus set in the Qlik document, split by employee according to excel formulas live in the grid. The proposed bonus may be over-assigned in the next column.

The forecast input will not be saved until the over-assigned bonus respect the global bonus and if the global reforecast exceeds the initial global budget (validation rule).

All inputted cells and formula calculations are saved to the SQL buffer tables, ready to be exported in the enterprise database.

Analytic	cs K4 fo																											
Analyu	C5 K410																											
	YEA	<b>R</b> 5 2016 20		VISIO			<b>IPLOY</b>	EE E01003	504	005 5	Q E01007						Deadli		_	Share	d Bonu	s for th		ployees				
<i>&gt;</i>	2013	5 <mark>2016</mark> 20	017 <mark>A</mark>		5			E01003			01007						15/12/2	016		Î	4000	80	00	12000	16000	20000		
																				-								
4 Analy	ytics den	no for HR	l - Detail	ed exp	lanatio	ns in t	he Cu	stom H	elp																			
8	ē -	5 -	1	û	â	ß			1	2			28															
																	Deadline	15/12	2/16					f(Bonus)	Bonus	Delta		
	Name	Surname	FTE 2016	JAN	FEB MA	R APR	MAY	UN JUL	AUG	SEP (	DCT NO	V DEC	Average	e Gross sal	ry	2016	Pay increas	e starti	ng day /	deadline n	months	Increase	Variable	8.000	3 800	- 4 200	Total	Difference
			Budget	1.0	0.5 0	5 0.5	0.5	1.0 1	.0 1.0	1.0	1.0	1.0 1	.0 0.8	3 40 0											1 0 000 1	42.00	40 000	
01001	John	Smith	Forecast		0,0 1				0 0,0			0.0				orecast	<b>d</b> 12	0 01/10	0/2016		3	360	100	1 485	3 000	1515	21 200	- 18 800
_			Budget		1.0 1				.0 1.0			1.0 1				orecose		01/10	0/2020			500	100		0000		24 000	10 000
01002	Chris	Sullivan										-											<b>.</b>					
			Forecast		1,0 1				,0 0,0		-	0,0 O				orecast	14	0 01/08	8/2016	al	5	700	<u> </u>	D 743	0	-7-2	9 870	- 14 130
01003	Tom	Nielsen	Budget	1,0	1,0 1	,0 1,0	1,0	1,0 0	5 0,5	0,5	0,5	0,5 0	5 0,7	5 40 0	0												40 000	
			Forecast	2,0	1,0 6	.0 1,0	1,0	3,0 0	0,0 0,0	0,0	0,0 (	0,0 0	0 1179	62 2	2	Forecast	1 3	0 03/05	5/2016	al.	8	240	30	5 773	800	-4 973	63 472	23 472
										Г				6 17 778													ast impact: 🥥	9 458

A mix of QlikView and Qlik Sense users can share the same application contributing to the same database:

