

Fiori SQL Console

The Fiori SQL Console is an app for IT professionals familiar with the database query language SQL. It offers to manually create, execute and store Select statements and is designed for the role Data Analyst.

Story

SQL is a Structured Query Language to access databases. Here we are talking about queries that read SAP tables especially if more than one table is required for a special analysis. SQL is used by ABAP programs and is available on all relational (= table oriented) databases where you can manually input a query - called SQL statement – and get an immediate result in the shape of one or more – maybe many – data records answering the query.

In the SAP Business Suite there is currently no way to manually enter and execute an SQL statement. The purpose of this app is to prevent the need of IT professionals to create seldom used ABAP reports or extensively use additional office software like Excel. This may be the case when they try to fulfill tasks in the area of data analysis with respect to data quality, error analysis and detection of special business aspects that are not covered by standard SAP transactions.

The Fiori SQL Console offers to execute SQL statements and to store them in order to reuse them from time to time possibly in a slightly adjusted way.

So the app will be admired by businesses that employ in-house IT professionals like administrators, consultants, developers provided the IT professionals are familiar with SQL.

- ➔ Segmentation: no specific branches; businesses who employ in-house IT professionals, businesses who offer managed services to SAP customers and potentially also Consulting companies
- ➔ Targeting: IT professionals; the group of system maintenance users (e.g. admins, consultants, developers) as far as they are used to speak SQL
- ➔ Positioning: Even if the app will show some constraints compared to a standard SQL console as available for instance in the SAP HANA Studio, it will provide tremendous time gains for users. Besides that, as it is a Fiori app, the Fiori SQL Console will be delightful to its users.

User Experience Journey

Pain Point	<p>In a before-HANA-SAP-system you cannot reuse your analysis work in an appropriate way. And in the HANA world you need to install an Eclipse based SAP HANA Studio to make use of its SQL Console.</p> <p>Every time you want to answer a certain question related to data in more than one SAP table you need to repeat a series of steps involving a SAP table transaction and supplementing usage of excel.</p> <p>There are only rare cases where the usage of SAP queries was applicable.</p>	
Example	Retrieve accounting information form purchase orders, if there is no suitable standard report.	
	SAP-SE16	Filter PO headers by relevant criteria download result to Excel File 1
	Excel	Copy list of PO numbers as key for the next SAP table
	SAP-SE16	Filter PO items by copied list of PO numbers and other relevant criteria download result to Excel File 2
	Excel	Copy list of PO numbers as key for the next SAP table
	SAP-SE16	Filter PO accounting table by copied list of PO numbers and other relevant criteria download result to Excel File 3 This result has got too many records because SE16 is not able to filter for pairs of PO number and PO item
	Excel	Exclude item records from File 3 which are not part of File 2 this step requires advanced excel knowledge and will provide the requested information (accounting lines)
	There are even more complex examples where you have to build a substring of a field in excel and then filter for certain substrings before you copy the list of resulting keys to the SE16 screen.	

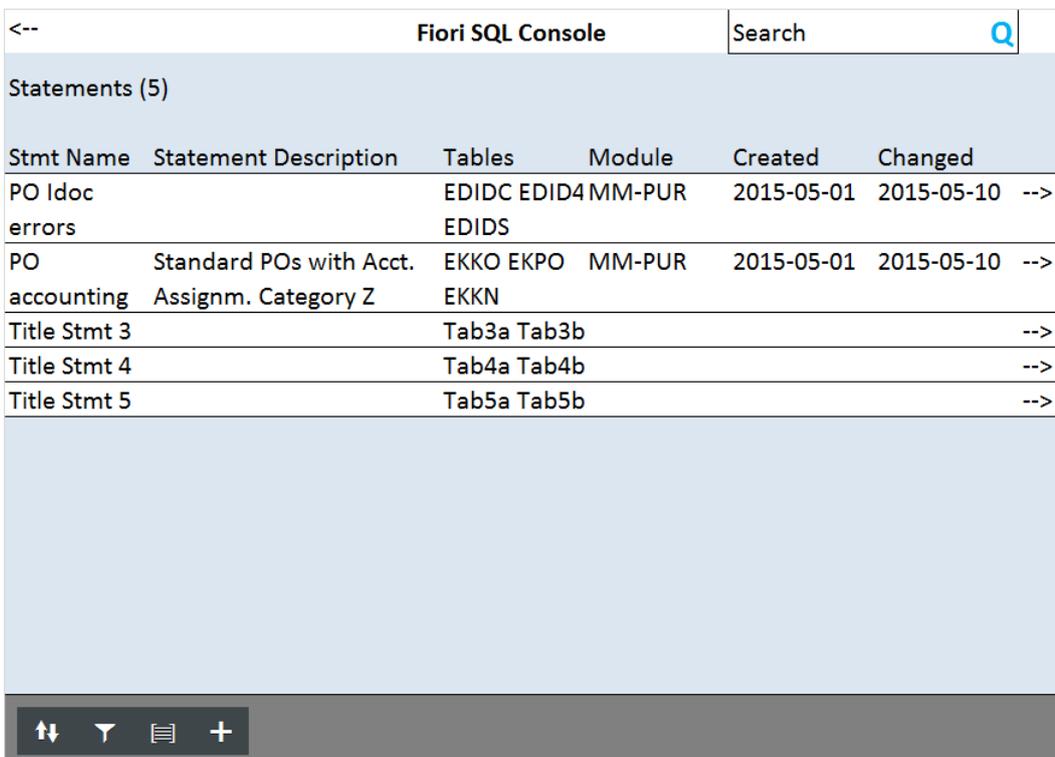
Mindset: professional; if you cannot change it do not complain; just do it.
Actions: see above; duration depends on the task, above may be 10 minutes.
Touchpoints: keyboard, mouse/touchpad, screen, SAP GUI, PC file system, Excel

Mockup

Design Considerations

- 1) On the first screen a Master/Detail view might be suitable while on the result screen it has to be a Full Screen for maximal width. According to the Fiori rules a decision was made for only one template, the Full Screen.
- 2) If you want to analyze data you are not interested in plenty of columns; so the number of seven should be sufficient in general.

Screen 1



The screenshot shows the Fiori SQL Console interface. At the top, there is a navigation arrow, the title "Fiori SQL Console", and a search field with a magnifying glass icon. Below the title bar, the text "Statements (5)" is displayed. A table lists five statements with columns for "Stmt Name", "Statement Description", "Tables", "Module", "Created", and "Changed". Each row ends with a right-pointing arrow. At the bottom of the screen, there is a dark grey bar with four icons: a double-headed vertical arrow, a funnel, a list icon, and a plus sign.

Stmt Name	Statement Description	Tables	Module	Created	Changed	
PO Idoc errors		EDIDC EDID4	MM-PUR	2015-05-01	2015-05-10	-->
PO accounting	Standard POs with Acct. Assignm. Category Z	EKKO EKPO	MM-PUR	2015-05-01	2015-05-10	-->
Title Stmt 3		Tab3a	Tab3b			-->
Title Stmt 4		Tab4a	Tab4b			-->
Title Stmt 5		Tab5a	Tab5b			-->

You see a list of already available statements, can scroll down, sort, filter and group, and create a new statement entry. Selection of an entry leads → to the detail screen. In the search field you can search for statement names.

Screen 2

Fiori SQL Console

Statement Maintenance

Statement Name	PO accounting
Description	Standard POs with Acct. Assignm. Category Z
Tables	EKKO EKPO EKKN
Module	MM-PUR

```

select T1.EBELN PO, T2.EBELP Item, T3.ZEKKN Line, T3.ZZ001 Acct1, T3.ZZ002 Acct2
from EKKO T1, EKPO T2, EKKN T3
where T1.EBELN=T2.EBELN and T2.EBELN=T3.EBELN and T2.EBELP=T3.EBELP
and T1.LOEKZ="" and T1.BSTYP="F"= and T1.BSART="NB"
and T2.LOEKZ="" and T2.KNTTP="Z"
            
```

Execute Statement
Save Statement

You get there in edit mode and can change the four properties above and the select statement below. You can save your changes. The button “Execute Statement” leads you to the next screen. The arrow in the upper left corner navigates back to the first screen. In the text area of the statement you can scroll down.

Screen 3

Fiori SQL Console

PO accounting

Result records (312)

PO	Item	Line	Acct1	Acct2		
12345	10	1	abc	def		
12345	20	1	abc	def		
12345	20	2	abc	def		
12345	30	1	abc	def		
23456	10	1	ghi	jkl		
23456	40	1	ghi	jkl		
12345	20	1	abc	def		
12345	20	2	abc	def		
12345	30	1	abc	def		
23456	20	1	ghi	jkl		
23456	40	1	ghi	jkl		
23456	60	1	ghi	jkl		
23456	80	1	ghi	jkl		

Download Statement

The result is displayed. You can scroll down. You may download the result records to a CSV file (choose directory and filename) and you may go back to the previous screen. The download button may be useful if you have to tell your user in excel format which purchase order IDocs have gone in error status (and the list may be long).

Development

The development process consists of the following steps

- Define the data model
- Create an app based on the SAP Fiori Full Screen Template. This template provides two screens and **the app is currently displaying the result on the bottom of the second screen.**
- Adjust the fields in the tables on both screens
- Arrange the detail fields in the second screen by usage of several SimpleForm elements
- Insert some buttons on the footer of the second page
- Try to reuse the coding for the maintenance buttons on screen two provided on "Explored" (does not work if you have not got much time)
- Make use of a choice element (just to use it) but perhaps free text is here the better option

Data Model

In a master table the SQL statements and related information is stored. The result of the statement execution is stored in lines with a multiplicity of 1 to n.

1 Statement	n Result lines
select name from names	Peter Paul Mary

While the master table is stored in the backend the lines are never stored. They are provided by the OData service in relation to a single statement execution and cast away afterwards.

The SQL select statements show the following properties:

Statement Id	Key; makes the statement unique in case the statement name is not; automatically provided
Statement Name	A short description of the statement; there is a filter on name in the first screen
Statement Description	A longer description
Tables	Contain an unstructured list of tables or views which the query is selecting from
Module	Here you can specify a SAP module provided from list on screen two. Implemented as choice field in edit mode of screen two
Dates	Creation Date und Last Maintenance Date, automatically set
Statement	A string currently set to length 500; displayed on the second screen
Message	In this field the OData Service passes a system response to the statement execution; displayed on the second screen, below the SQL statement and before the result table.
Column Titles	The seven column titles are defined by the SQL statement; they are passed in seven fields
Value Alignment	The horizontal alignment of the result columns is defined by the SQL statement; seven fields with "Left" or "Right" are passed to the result table.

The result of the statement execution is stored in lines with a multiplicity of 1 to n.

Statement Id	Key from the statement properties
Line	Key; counter for the output lines
Fld1	First of seven possible output columns, each currently set to a length of 50 characters
..	
Fld7	Last possible output column

The OData Service has to truncate column titles and result values if they need more than 50 characters.

Screen 1

The screenshot shows the 'Fiori SQL Console - Statement Selection' interface. At the top, there is a search bar labeled 'Search' with a magnifying glass icon. Below the search bar is a table with the following data:

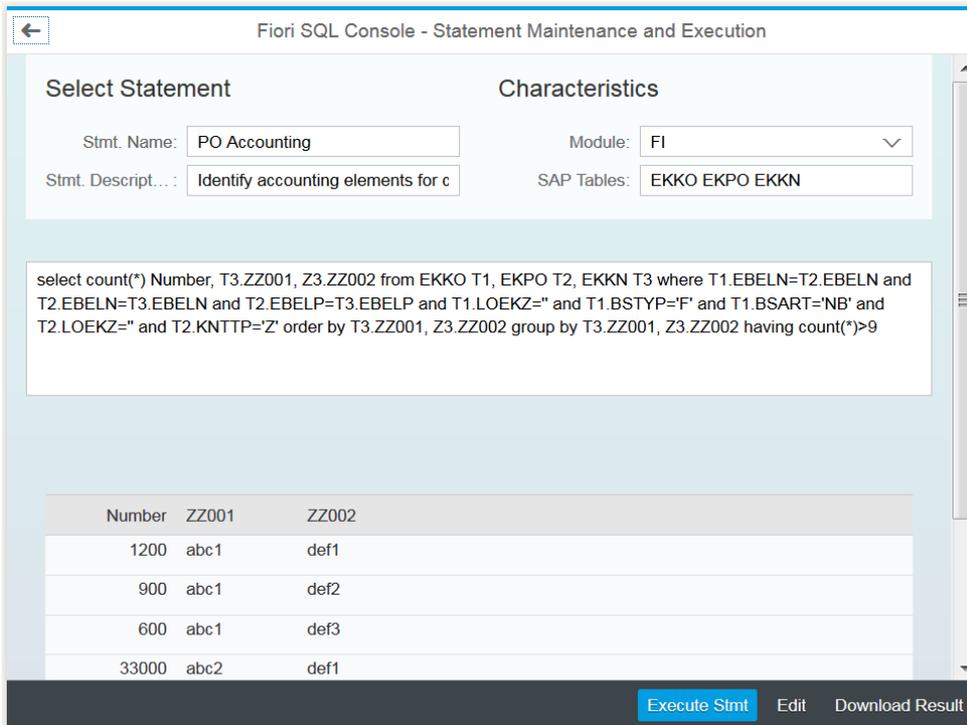
Stmt Name	Description	Module	Created	Changed	
PO IDoc error	Select PO numbers of error IDocs based on message ID	MM-PUR	2015-04-30	2015-05-10	>
PO Accounting	Identify accounting elements for customer account assignment category Z	MM-PUR	2015-04-30	2015-05-10	>
Stmt Name 3	Description 3		2015-04-30	2015-05-10	>
Stmt Name 4	Description 4				>
Stmt Name 5	Description 5				>

The search field searches on statement name.

Screen 2 with error message

The screenshot shows the 'Fiori SQL Console - Statement Maintenance and Execution' interface. It has two main sections: 'Select Statement' and 'Characteristics'. In the 'Select Statement' section, the 'Stmt. Name' is 'PO IDoc error' and the 'Stmt. Description' is 'Select PO numbers of error IDocs'. In the 'Characteristics' section, the 'Module' is 'FI' and the 'SAP Tables' are 'EDIDC EDID4 EDIDS'. Below these sections is a text area containing the SQL query: 'select * from EDIDC'. Below the text area, there is an error message: 'Too many columns.' Below the error message is a table with the text 'No data'. At the bottom of the screen, there are three buttons: 'Execute Stmt', 'Edit', and 'Download Result'.

Screen 2 with result lines



The statement is embedded in a Text Area element which allows for scrolling down if the statement is getting too long. Currently it is not clear whether it is possible to store line breaks that the user inserts. Currently there is missing a create button. After pressing the edit button it is replaced by a save button and a cancel button (does not work yet).

The titles used in screen 2 (Select Statement, Characteristics) and their format are subject to discussion; anyway they are there in order to fit Fiori Guidelines.

Selection of Design Elements

- Picture of metadata.xml
- Picture of text area for statement
- Picture of choice field for module
- Picture of Column assignments title and horizontal alignment

<pre> <EntityType Name="FSStatement" sap:content-version="1"> <Key> <PropertyRef Name="StmtId"/> </Key> <Property Name="StmtId" Type="Edm.String" Nullable="false" Ma <Property Name="StmtName" Type="Edm.String" MaxLength="30" sa <Property Name="Created" Type="Edm.String" MaxLength="10" sap <Property Name="Changed" Type="Edm.String" MaxLength="10" sap <Property Name="Description" Type="Edm.String" MaxLength="80" <Property Name="Module" Type="Edm.String" MaxLength="10" sap: <Property Name="Tables" Type="Edm.String" MaxLength="40" sap: <Property Name="Statement" Type="Edm.String" MaxLength="500" <Property Name="Message" Type="Edm.String" MaxLength="500" sa <Property Name="Col1" Type="Edm.String" MaxLength="50" sap:la <Property Name="Col2" Type="Edm.String" MaxLength="50" sap:la <Property Name="Col3" Type="Edm.String" MaxLength="50" sap:la <Property Name="Frm1" Type="Edm.String" MaxLength="5" sap:lab <Property Name="Frm2" Type="Edm.String" MaxLength="5" sap:lab <Property Name="Frm3" Type="Edm.String" MaxLength="5" sap:lab <NavigationProperty Name="FSResults" Relationship="SALESORDER </EntityType> <EntityType Name="FSResult" sap:content-version="1"> <Key> <PropertyRef Name="StmtId"/> <PropertyRef Name="Line"/> </Key> <Property Name="StmtId" Type="Edm.String" Nullable="false" Ma <Property Name="Line" Type="Edm.String" Nullable="false" MaxL <Property Name="Fld1" Type="Edm.String" MaxLength="50" sap:la <Property Name="Fld2" Type="Edm.String" MaxLength="50" sap:la <Property Name="Fld3" Type="Edm.String" MaxLength="50" sap:la <Property Name="Fld4" Type="Edm.String" MaxLength="50" sap:la </pre>	<p>TextArea for Statement</p> <pre> <!:HorizontalLayout class="sapUiContentPadding" width="100%" > <!:content><TextArea cols="200" rows="4" value="{Statement}" /> </!:content> </!:HorizontalLayout> </pre>
	<p>Choice Field for Module</p> <pre> <core:Title text="Characteristics" /> <Label text="Module" /> <Select width="100%"><items> <core:Item text="FI" /> <core:Item text="FI-AA" /> <core:Item text="CO" /> <core:Item text="MM" /> <core:Item text="MM-PUR" /> </items></Select> </pre>
	<p>Assignments for Column 1 in result table</p> <pre> <Column id="navigationTable_colum hAlign="{Frm1}" vAlign="Top"> <header id="navigationTable_cc <Label id="navigationTable_col text="{Col1}" /> </header> </Column> </pre>

Persona

This last paragraph is due to the challenge requirements.

Name	Peter	Job Responsibilities	Consulting in SAP projects, optimization of business processes optimization of SAP systems
Main Goals	Deliver advantages to the customer Complete projects in time and budget	Background	45 years old, married, degree in computer science 10 years experience in SAP application consulting prior to this 10 years experience in developing non-SAP
Job Title	Senior Consultant	Needs	I need to reduce non-value added activity
Wish	“For me, I would like to improve efficiency and effectiveness of data analysis.”	Pain Points	Organizational and technical limitations that look improvable but tend to stay as they are.
Stakeholder	Project members Users	Competencies	