



PUBLIC

SAP Business Process Improvement – Best-Practice Guides

Dependency Diagrams in SAP Solution Manager 7.2 SP11

www.sap.com/contactsap

© 2020 SAP SE or an SAP affiliate company. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP SE or an SAP affiliate company.

The information contained herein may be changed without prior notice. Some software products marketed by SAP SE and its distributors contain proprietary software components of other software vendors. National product specifications may vary.

These materials are provided by SAP SE or an SAP affiliate company for informational purposes only, without representation or warranty of any kind, and SAP or its affiliated companies shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP or SAP affiliate company products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.

In particular, SAP SE or its affiliated companies have no obligation to pursue any course of business outlined in this document or any related presentation, or to develop or release any functionality mentioned therein. This document, or any related presentation, and SAP SE's or its affiliated companies' strategy and possible future developments, products, and/or platform directions and functionality are all subject to change and may be changed by SAP SE or its affiliated companies at any time for any reason without notice. The information in this document is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Readers are cautioned not to place undue reliance on these forward-looking statements, and they should not be relied upon in making purchasing decisions.

SAP and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP SE (or an SAP affiliate company) in Germany and other countries. All other product and service names mentioned are the trademarks of their respective companies. See www.sap.com/copyright for additional trademark information and notices.

TABLE OF CONTENTS

1	ABOUT THIS DOCUMENT	4
2	INTRODUCTION – WHAT ARE DEPENDENCY DIAGRAMS	5
2.1	Motivation	5
2.2	Supported web browsers	6
2.3	Required software components and SAP notes	6
3	PREREQUISITES	8
3.1	Technical prerequisites	8
3.2	Assign required authorizations	8
4	HOW TO CONFIGURE DEPENDENCY DIAGRAMS	10
4.1	Architecture	10
4.2	Exemplary Use Case	10
4.3	How to access Dependency Diagrams Configuration	11
4.4	Best Practice Setup of Dependency Diagrams	11
4.4.1	Create Analytical Key Figure Instances (AKFIs)	12
4.4.1.1	Add Analytical Key Figure Instance	12
4.4.1.2	New Analytical Key Figure Instance: Technical Name and Description	13
4.4.1.3	Analytical Key Figure Details	13
4.4.1.4	Filter	15
4.4.1.5	Rating	18
4.4.1.6	Save	19
4.4.2	Create Dependency Diagram and Include AKFIs	19
4.4.2.1	Add Dependency Diagram	19
4.4.2.2	Dependency Diagram details	19
4.4.2.3	Assign AKFIs	21
4.4.2.4	Save	23
4.4.2.5	Start	23
4.5	Incorporate overarching business goal from Business BI	23
4.5.1	BW Connector Setup	24
5	HOW TO USE DEPENDENCY DIAGRAMS	26
5.1	How to access Dependency Diagrams	26
5.1.1	Selecting a key figure tree	27
5.1.2	Expand a key figure tree	28
5.1.3	Links and Refresh	29
5.1.4	Deriving Insights	29
5.1.4.1	Display technical names	30
5.1.4.2	Jump to Business Process Analytics	30
5.1.4.3	Historical Values in the tiles	31
6	TROUBLESHOOTING	32
6.1	No data displayed in tile	32
6.2	Failures in updating Dependency Diagram Tiles	32
6.3	Data inconsistencies when comparing BP Analytics with Dependency Diagrams	32
6.4	Functions Age Analysis and Advanced Benchmarking Cannot Be Used in Business Process Analytics	32

1 ABOUT THIS DOCUMENT

This best-practice guide for SAP Business Process Improvement is part of a series of guides which describe the different applications within the Business Process Improvement portfolio in SAP Solution Manager.

This document is based on the SAP Solution Manager 7.2 SP11.



Additional information is indicated by the lightbulb icon.



Important remarks are indicated by the exclamation mark icon.

2 INTRODUCTION – WHAT ARE DEPENDENCY DIAGRAMS

2.1 Motivation

In every Business Process Improvement project governance and change management is a crucial factor for a successful outcome to achieve your expected benefits. Therefore, it is very important that Business and IT management is gaining transparency about the current status of the most important KPIs to be analyzed and improved for the corresponding goal areas and about the progress of these KPIs within your continuous improvement project. Goal Areas could be business goals such as Days of Sales Outstanding, Days of Payables Outstanding, Order Fulfillment, Cost of Period End Closing, etc..

It is also very important to analyze any possible negative influencing factors on these business goals based on the information from your running SAP business processes in your solution landscape. Our problem-oriented and out-of-the-box available SAP Business Process Analytics key figures can identify process delays, process inefficiencies and other business-related process exceptions and can therefore show possible negative impacts on the outcome of various business goals.

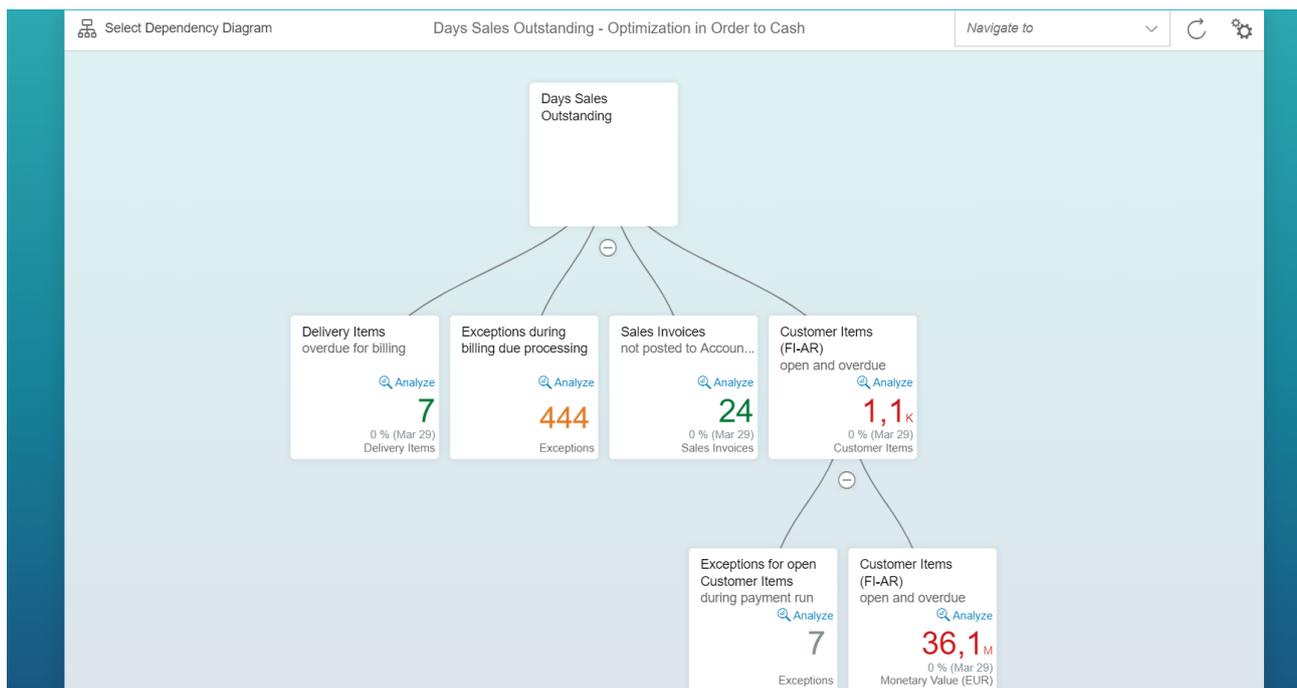
With the help of the Dependency Diagrams building on top of the Business Process Analytics, you can visually connect your business goal to Business Process Analytics key figures and show relations and dependencies between these key figures in a structure.

If you measure and report your overarching business goal (like “Order Fulfillment Rate”, “Case Fill Rate”, “Cost & Duration of PEC”, “DSO”, “DPO”, etc.) already in BI you can incorporate (as of SAP Solution Manager 7.1 SP13) the corresponding BI Query in your dependency diagram which brings the BI Reporting world and the operational, problem-oriented BP Analytics world together in one picture.



The SAP Solution Manager applications Business Process Analytics and Business Process Monitoring can provide data for Dependency Diagrams. Furthermore, customer-specific data sources (such as for example SAP BW InfoCubes, non-SAP BW InfoCubes, SAP tables, non-SAP databases) can be connected and used by Dependency Diagrams. Building on SAP Business Process Improvement best-practices, the focus in this guide will be on data provided by Business Process Analytics only.

User Interface



A *Dependency Diagram* provides an overview of operational key figures that influence a defined overarching business goal. On a single screen, the dependency chains of KPIs are visualized in a logical, hierarchical order.

You have the possibility to switch between several Dependency Diagrams (if access authorization is granted – see chapter [Assign required authorizations](#)**Error! Reference source not found.**). Each Dependency Diagram consists of one predominant business goal/value driver in the root-tile. Right below in the hierarchy there are the assigned tiles filled with operational business key figures that influence the overarching goal. These tiles are arranged as configured in their dependencies. Virtual Characteristics can be used to define a company-related view that represents individual structures like regions, markets and/or business divisions/brands based on SAP organizational units like company codes, sales/purchasing organizations and plants.



*Within this guide, the term **KPI** refers to a problem-oriented Business Process Analytics **key figure**. These are provided out-of-the-box by SAP and collected in the [KPI catalog](#), which contains definitions, technical documentation and comprehensive descriptions. Data is collected for a key figure via a data source from a managed system.*

*An **analytical key figure** refers to the key figure plus the data source (i.e. Business Process Analytics TwinCubes – see chapter [4.1](#)).*

*An **analytical key figure instance (AKFI)** is an instance of such an analytical key figure with filtering and visualization parameters. An AKFI can contain data collections of the same key figure with different collection criteria or from multiple systems.*

To guarantee a well-controlled access to business sensitive data, Dependency Diagrams provide two approaches:

- a) Authorization objects: The access to Dependency Diagrams can be restricted by roles assigned to the users (see chapter [Assign required authorizations](#)).
- b) Filters: The data displayed in the tiles can be restricted by maintaining filters for the AKFI in the Dependency diagram configuration (see chapter [4.4.1.4](#)).

2.2 Supported web browsers

The user interface technology for Dependency Diagrams is developed in SAP UI5.

Please find the list of all tools of the Business Process Improvement Suite including the supported web browsers in chapter “Tools in Business Process Improvement Suite” of the documentation “Getting started with Business Process Improvement” which can be found on the SAP Wiki page

<https://wiki.scn.sap.com/wiki/display/SM/Business+Process+Improvement> on tab "Technical Information" -> Section "Howto" -> Getting started with Business Process Improvement.

2.3 Required software components and SAP notes

In order to use Business Process Improvement tool suite for Solution Manager 7.2, the following releases of software components are necessary as an absolute minimum:

- Solution Manager 7.2 SP08 or higher
- ST-A/PI (on Solution Manager) needs to be on ST-A/PI 01T SP2 or higher
- Each connected managed system must have **at least ST-A/PI 01T SP2** installed.
- All SAP notes need to be implemented in Solution Manager and managed systems as listed in the always updated **SAP note 2324106** “Business Process Improvement: required SAP notes for ST7.2 SP05 or higher”.

But the newest tools of the Business Process Improvement Suite require higher support packages of Solution

Manager 7.2, such as:

- **Unified Analytics:** Solution Manager 7.2 SP10 or higher
- **Automation Rate Dashboard (Automation Rate Cockpit):** Solution Manager 7.2 SP11 or higher

In order to setup and use Dependency Diagrams for Solution Manager 7.2, the following releases of software components are necessary as an absolute minimum:

- Solution Manager 7.2 SP08
- ST-A/PI (on Solution Manager) needs to be on ST-A/PI 01T SP2 or higher
- Each connected managed system must have **at least ST-A/PI 01T SP2** installed.
- All SAP notes need to be implemented in Solution Manager and managed systems as listed in the always updated **SAP note 2324106** "Business Process Improvement: required SAP notes for ST7.2 SP05 or higher".

3 PREREQUISITES

3.1 Technical prerequisites

The Dependency Diagram is displaying data provided by the data collection which has been activated for Business Process Analytics. The objects for Business Process Analytics to collect the data from the managed system are called **Analytics Objects** (also named **KPIs**). Hence, this data collection needs to be up and running. A detailed description on how to set up the data collection for Business Process Improvement" you can find in chapter "Setup Data Collection for Business Process Improvement " of the documentation "Getting started with Business Process Improvement" which can be found on the SAP Wiki page <https://wiki.scn.sap.com/wiki/display/SM/Business+Process+Improvement> on tab "General" -> section "General" -> Link name: " Getting started with Business Process Improvement"



The Analytical Key Figure Repository (AKF Repository) is a runtime buffer to optimize the performance for Dependency Diagrams. It contains technical characteristics for all relevant key figures (once the key figure content has been (re)loaded). An entry in the AKF Repository is saved for every key figure / connector combination that exists on the system. It is recommended to update the update the AKF repository in the data source manager application or by executing the report AGS_BPM_RI_CREATE_GAKF with option "Delete and rebuild of GAKF" (further details are described in SAP note 1747971).

If you are new to Business Process Analytics, you can find all other technical prerequisites and necessary configuration steps for deploying Business Process Improvement, such as:

- the basic configuration in transaction SOLMAN_SETUP to create the necessary RFC destinations, as well as the creation of the users assigned to the RFC destinations
- the basic activation and customizing steps for BP Improvement
- the setup of the data collection for Business Process Improvement

you can find in chapter "Technical Prerequisites" of the documentation "Getting started with Business Process Improvement" which can be found on the SAP Wiki page <https://wiki.scn.sap.com/wiki/display/SM/Business+Process+Improvement> on tab "Technical Information" -> Section "Howto" -> Getting started with Business Process Improvement.

3.2 Assign required authorizations

The authorization concept of Business Process Improvement in general distinguishes between two different types of users:

- the **Configurator User** who is able to perform the fundamental configuration steps for Business Process Improvement and can see all business data as provided by the data collection and configuration of Business Process Improvement.
- the **Dialog User** who has only restricted authorizations in terms of features and functions, and only has a limited view on business data (for example only data for certain company codes or purchasing organizations).



In case you want to restrict the authorization of display users for this application (only in a later stage of your BPImp project), you will find a more detailed description of the roles and authorization objects specifically for Dependency Diagrams in chapter "Roles overview" of the documentation "Authorization Concept for Business Process Improvement" which can be found on the SAP Wiki page <https://wiki.scn.sap.com/wiki/display/SM/Business+Process+Improvement> on tab "General" -> section "General" -> Link name: "Authorization Concept for Business Process Improvement"

The following roles and authorization objects (including some additional value extensions for certain authorization objects) are required for a configuration user in Business Process Improvement (SAP Best Practice is to start with this set of roles):

- Required to enter Solution Manager Launchpad (tr. SM_WORKCENTER)
 - Role SAP_SMWORK_BPO: necessary to see BPO tabs in SM_WORKCENTER
 - SAP_BC_WEBSERVICE_CONSUMER: needed for SM_WORKCENTER and to display Dependency Diagrams
here authorization object S_SERVICE needs field SRV_TYPE extended by value 'HT'.
- Needed to create Solution and Logical Component Groups in Solution Administration and to maintain Solution Documentation:
 - Role SAP_SM_SL_ADMIN
 - Authorization Object S_SMDDOC:
 - ACTVT = 70
 - Authorization Object S_DEVELOP:
 - ACTVT = 01, 02 03, 06
 - DEVCLASS = *
 - OBJNAME = *
 - OBJTYPE = ECSD
 - P_GROUP = *
 - Authorization Object SM_SUTMNGT
 - ACTVT = 60
 - LC_NAME = *
 - SDC_NAME = *
- Required for Solution Documentation in order to maintain analytics objects
 - Role SAP_SYSTEM_REPOSITORY_DIS
 - Role SAP_SETUP_DSWP_BPM
- Required specifically for tools in Business Process Improvement Suite:
 - Role SAP_BI_E2E: needed to display data in BPImp tools provided by BW Twincubes for Business Process Improvement
 - Role SAP_SM_BPOANA_ALL General role in order to configure and administer Business Process Improvement
here authorization object SM_BPM_ANA needs the following field value extensions:
 - ANALYTFUNC = *
 - APP_AREA = *
 - BPM_OBJECT = *
 - SYSCLNT = *
 - Role SAP_SM_DASHBOARDS_ADMIN Needed to configure and display BPO Dashboards and Dependency Diagrams
 - Role SAP_SM_BPOIMP_ALL Needed to configure and display Unified Analytics and Automation Rate Cockpit
- (Optional, but sometimes helpful): Basic authorizations to check and maintain the SAP Solution Manager Configuration (transaction SOLMAN_SETUP)
 - Role SAP_SV_SOLUTION_MANAGER
 - SAP_SOLMAN_DIRECTORY_ADMIN

4 HOW TO CONFIGURE DEPENDENCY DIAGRAMS

4.1 Architecture

Dependency Diagrams can retrieve data from different data sources. Connectors represent the types of data sources. They establish the logical link between the Dependency Diagrams infrastructure and a specific data source. Connectors need to be instantiated once before usage for a specific connector type and the associated data source by creating a connector instance.

As mentioned above, the focus in this guide will be best-practices for SAP Business Process Improvement and thus on the BPA_TwinCube – Business Process Analytics Twin Cubes. They provide a data storage concept in BW for Business Process Analytics. The activation of this connector is described in SAP note 2424585 as mentioned in chapter 2.3 and in this guide you will also find information about how to set up the BW Connector in chapter [Error! Reference source not found.](#)

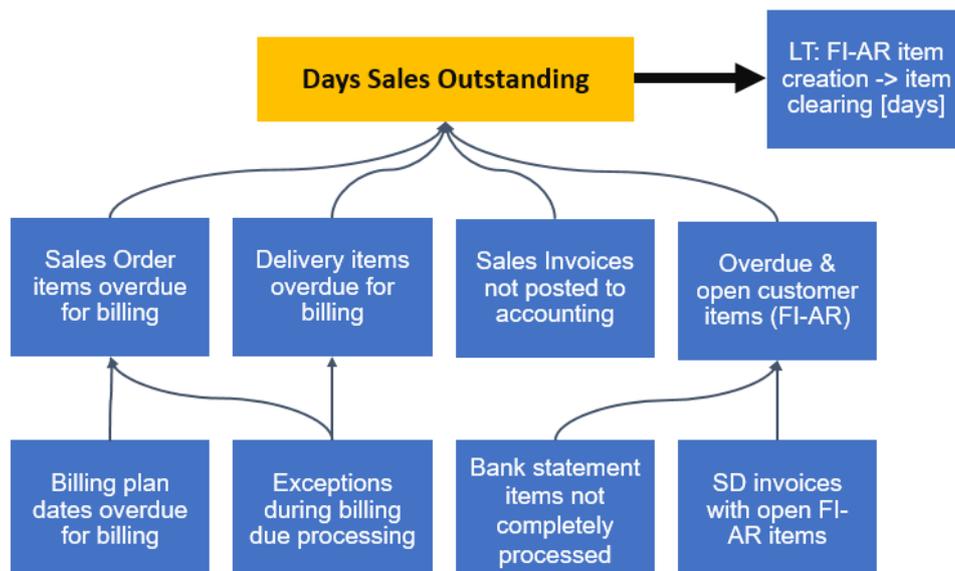
4.2 Exemplary Use Case

As previously explained, Dependency Diagrams are used for visualization of KPIs and their relationship to an overarching business goal. The key figure trees help you to get a quick overview on the status of your key business processes and can also provide an entry to further root cause analysis with Business Process Analytics.



Before you start creating the structure in SAP Solution Manager, you should think about the dependencies of the key figures and the business goal you want to create it for. As a starting point, you could create your own template using a drawing tool like Microsoft PowerPoint.

Example: In this example, a company aims to reduce their **Days of Sales Outstanding (DSO)**, i.e. how long it takes to collect outstanding money from their customers. DSO is a financial ratio that illustrates how well a company's accounts receivables are being managed and serves as the overall business goal the company wants to improve as part of this use case. Based on a DSO-related key figure selection, the company would like to have a global overview on cause and impact of the key figures. Together with SAP, the company agreed on the following dependencies:



The company defines DSO as the time from invoice creation to clearing, therefore the DSO measurement can be covered by the key figure "LT: FI-AR item creation -> item clearing [days]". How strategic KPIs as DSO are measured, varies from customer to customer. If and how they are included in the management UI's always needs to be decided individually. Typically, the company's definition of DSO is measured via a

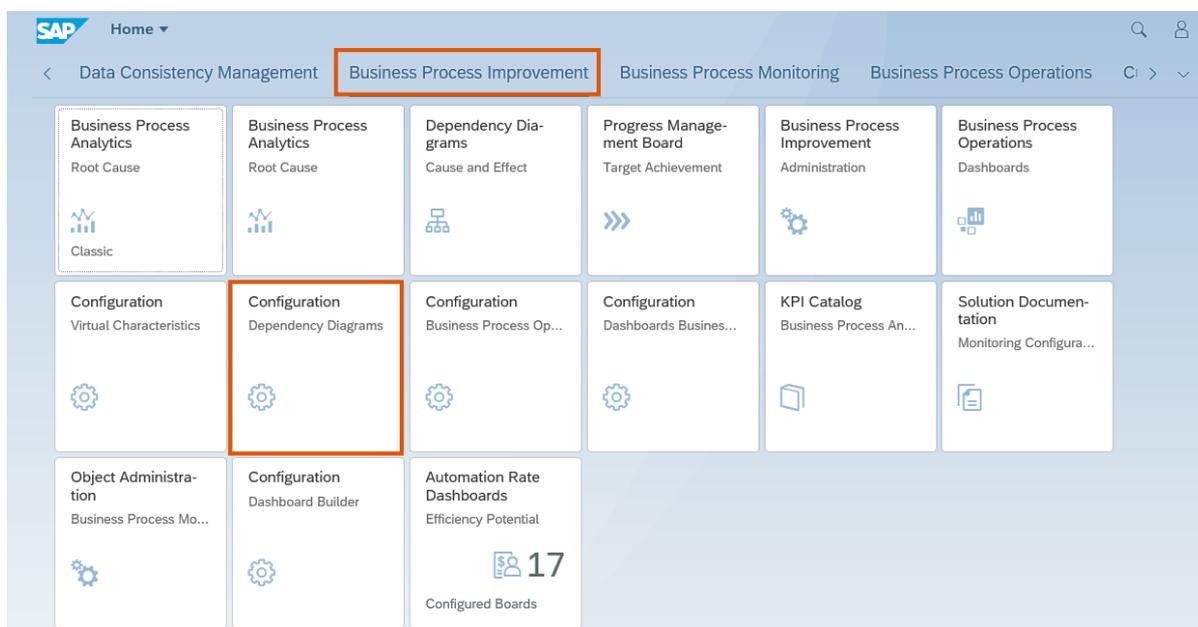
strategic Business Warehouse system. The “design” of the dependencies will be the basis for the configuration of the management UI “Dependency Diagram”.



The Dependency Diagrams can be configured to meet individual business requirements. The above example explains a typical business scenario according to SAP Business Process Improvement best-practices and can therefore be used as guideline, however uncountable scenarios and variations are imaginable and could technically be configured.

4.3 How to access Dependency Diagrams Configuration

Administrators can access the Dependency Diagram Configuration via the corresponding tile in the SAP Solution Manager Launchpad (transaction SM_WORKCENTER): in the launchpad, navigate to the tab *Business Process Improvement* and click on the tile **Configuration Dependency Diagrams**.



4.4 Best Practice Setup of Dependency Diagrams

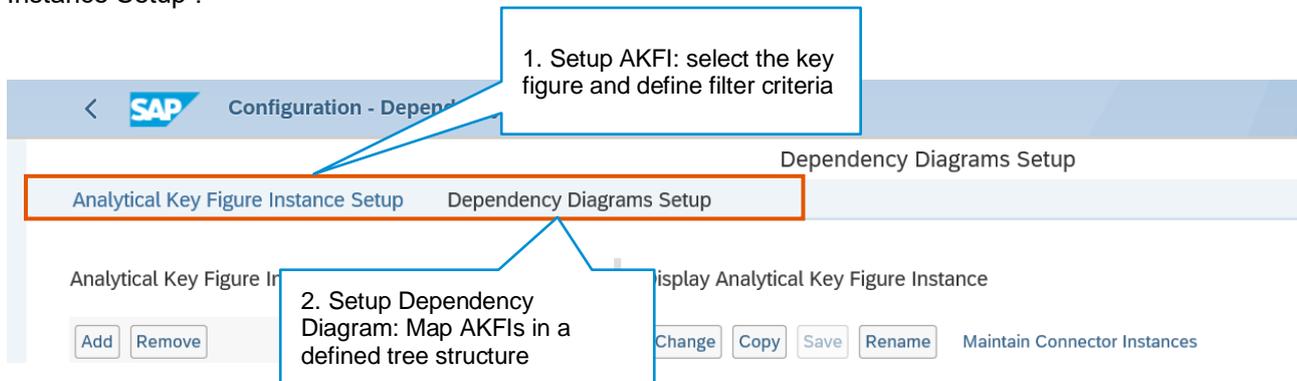
There are no diagram templates shipped with this application. Instead, you must model everything yourself. The configuration has some similarities to the configuration of Business Process Operations dashboards in SAP Solution Manager. So, you have to create Analytical Key Figure Instances (AKFIs) first, where you define which data should be displayed from which source and define potential thresholds. Then, you model the respective Dependency Diagram / KPI Hierarchy and bring the AKFIs into some logical order.

The Setup Analytical Key Figure Instance from the Setup for BPO Dashboards can be used as well for creating the AKFIs for Dependency Diagrams. Both ways for setting up AKFIs are equivalent and can be used in both Dependency Diagrams as well as in BPO Dashboards. In interests of simplification only the AKFI Setup in Dependency Diagrams Configuration is described, nevertheless both are very similar. In this case, category and drilldown dimension will be ignored.

The configuration of Dependency Diagrams consists of two basic steps:

1. Setup Analytical Key Figure Instance (AKFI)
2. Setup Dependency Diagram

These two necessary steps are reflected in the two tabs in the top of the *Setup* application. After opening the tile “Configuration Dependency Diagrams”, you will initially end up in the Tab “Dependency Diagrams Setup”, nevertheless at the beginning you will have to start with setting up the AKFIs in the tab “Analytical Key Figure Instance Setup”.



4.4.1 Create Analytical Key Figure Instances (AKFIs)



Before starting with the configuration, it is recommended to create a naming convention for the AKFIs that shall be setup. A naming convention can for example consist of the following:

<DISTRIBUTION>_<SYSTEM>_<GOAL/APPLICATION AREA>_<KPI>, e.g.

REGION_ER1_SD_Sales_order_overdue_for_billing_since_30d

To define which data and how this data should be displayed, an AKFI needs to be created by specifying:

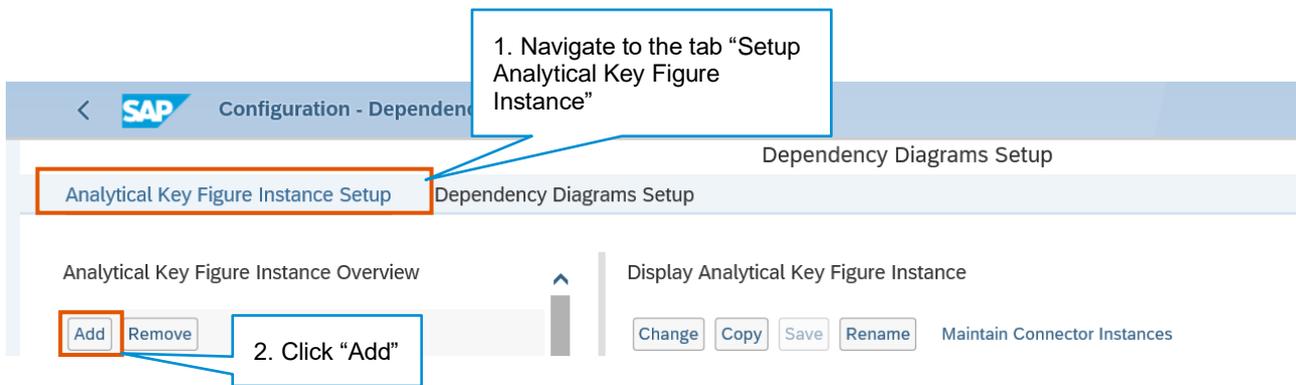
- The kind of data (key figure) that should be displayed, for example “Sales orders overdue for billing since 30 days” – this is done by assigning the analytical key figure. Simultaneously you specify the data source from where the data should be retrieved – building on SAP Business Process Improvement best-practices (as described in chapter 4.1 this shall always be the BW TwinCube by assigning the respective connector instance which is associated to the data source.)
- The filter(s) that restrict the data displayed – this restriction of displayed data can be made by setting filters on certain characteristic values.



An AKFI can be reused in several tiles.

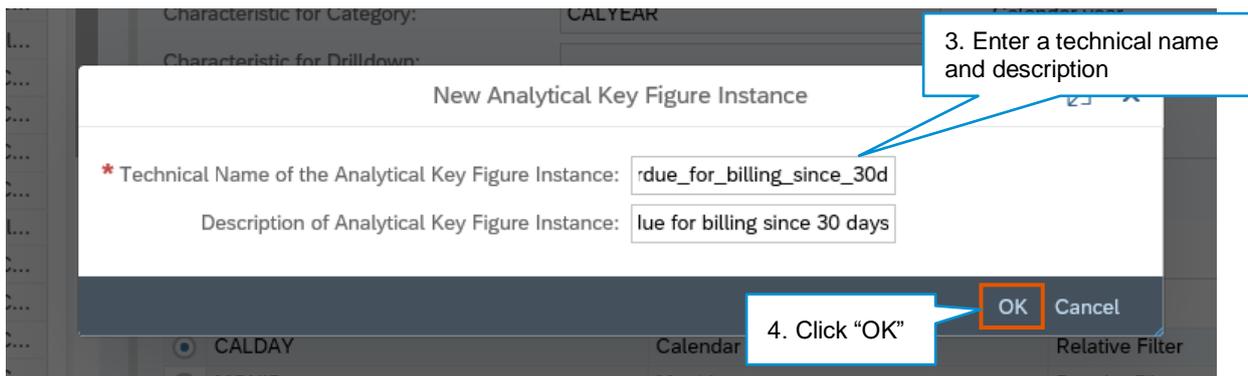
4.4.1.1 Add Analytical Key Figure Instance

In the tab **Setup Analytics Key Figure Instance**, select the button “Add” on the upper left of the screen.



4.4.1.2 New Analytical Key Figure Instance: Technical Name and Description

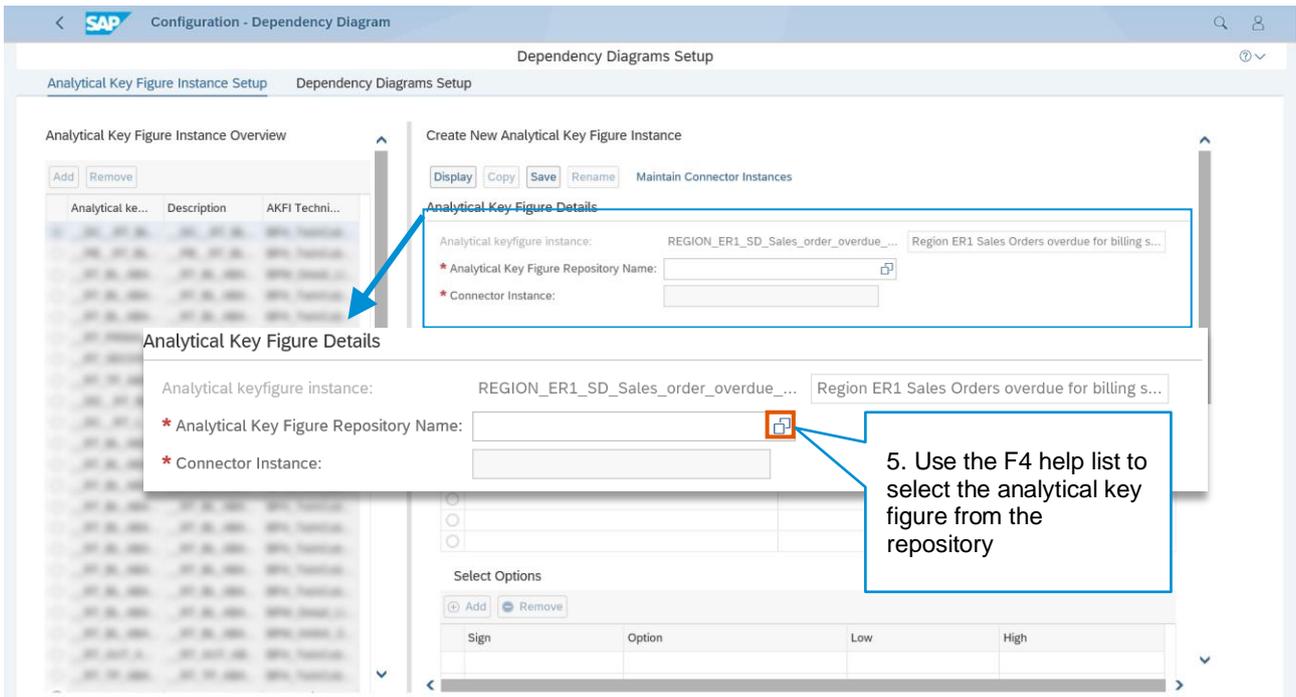
Now, details for the AKFI can be added. First, a technical name and description of the new AKFI need to be maintained in the pop-up that appears, then press "OK".



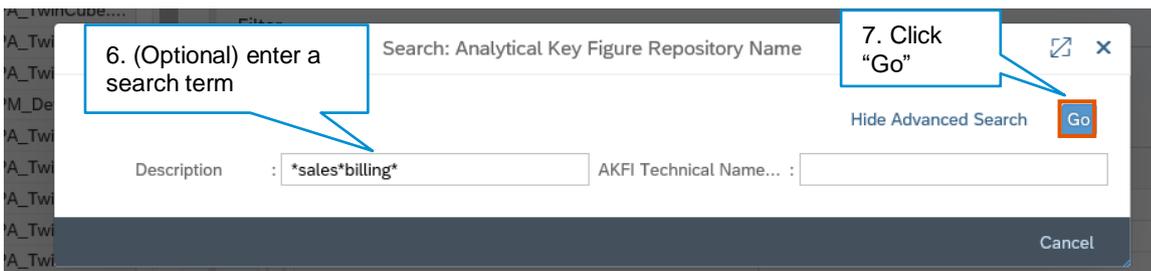
 The technical name can only contain valid characters, such as letters, numbers, and `_`. The technical name can only be changed via the "Rename" button if the AKFI is not used in a panel (or within other applications such as the Dependency Diagrams). The description can be adjusted at any point in time. It should be a meaningful description, as it is shown in the application to the end-user.

4.4.1.3 Analytical Key Figure Details

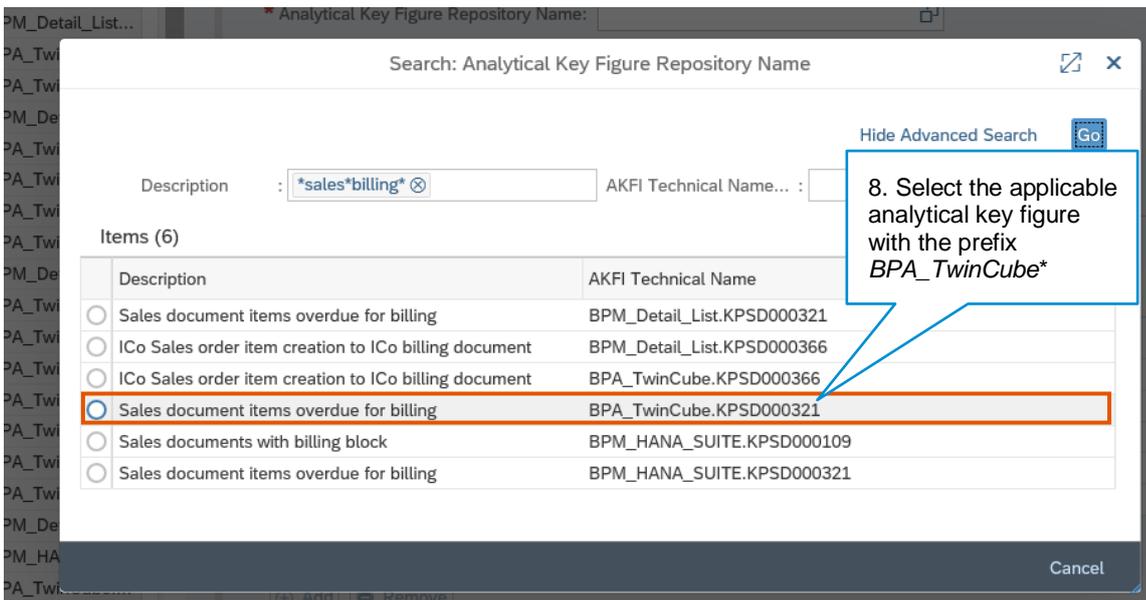
Under "Analytics Key Figure Details" in the "Create New Analytical Key Figure Instance" section, further details need to be maintained. Select the analytical key figure from the repository (field "Analytical Key Figure Repository Name") by using the F4 help for that field.



In the pop-up that opens, enter key terms to search for the corresponding analytical key figure and press “Go”.



 There may be more than one entry for an analytical key figure. This will be the case if the key figure exists in different data sources (which are connected via different connector instances). In order to find the correct key figure associated to the right data source, take a closer look at the prefix of the technical name – according to the best-practices, select the *BPA_TwinCube**.



The “Connector Instance” is hence filled automatically. Once the AKFI was saved, the selected analytical key figure (field “Analytical Key Figure Repository Name”) cannot be changed anymore.



It is possible to navigate to the Data Source Manager application via the “Maintain Connector Instances” link above the analytical key figure details. Within this application, both connector and connector instances can be maintained, and the AKF repository can be updated via the corresponding button. Further details can be found in the documentation for [Business Process Improvement Administration](#).

4.4.1.4 Filter

Once the basic settings have been made, you can apply one or more filters to your AKFI. This means, the filter criteria for an AKFI are defined in this step.

- a) To identify the correct key figure, it is mandatory to add a filter on the *monitoring ID* (MONID). This monitoring ID uniquely identifies a data collection of a key figure from a particular managed system.
- b) For this, press “Add Filter Element” and then use the F4 help list to select the “Techn. Name of Characteristic”.

Filter Characteristic

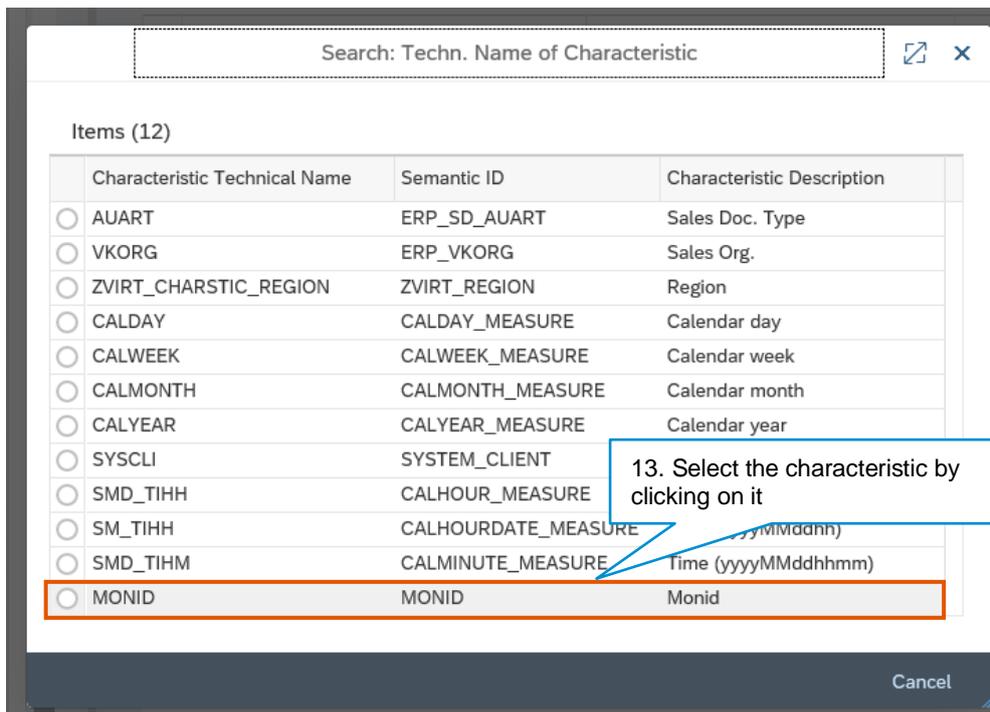
11. Click “Add Filter Element”

⊕ Add Filter Element ⊖ Remove Filter Element ^ v

	Techn. Name of Characteristic	Characteristic Description	Filter Type
<input checked="" type="radio"/>			
<input type="radio"/>			

12. Use the F4 help to select a filter element

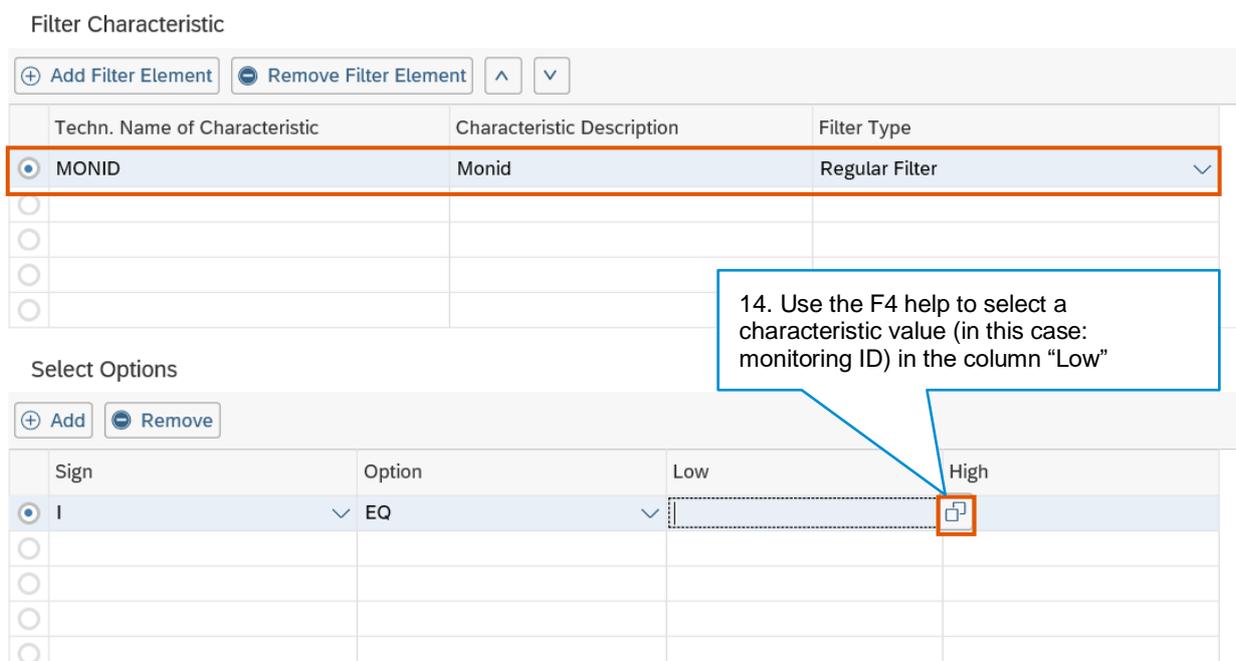
In the pop-up that appears, select the MONID.



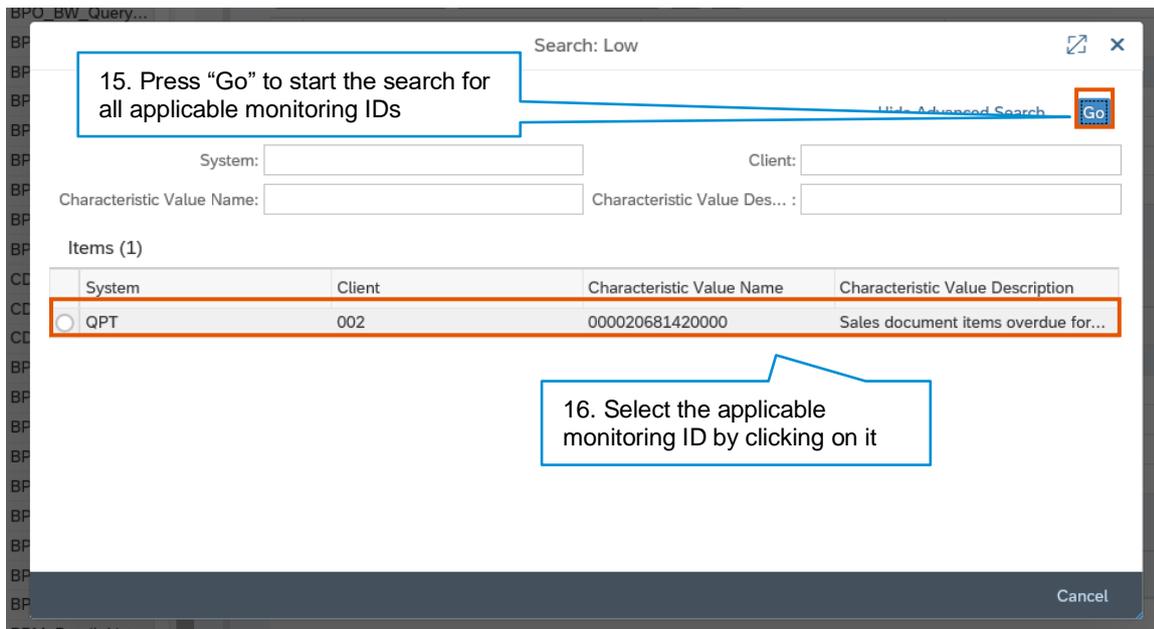
In the corresponding select options, i.e. the table underneath the table for filter characteristics, again, uses the F4 help to select the value for this regular filter. The regular filter effects a direct filtering on certain values of a filter characteristic. It can be used with all filter characteristics.

For the regular filter MONID, the sign is always “I” (include), with option “EQ” (equals) and the corresponding monitoring ID maintained in column “Low”.

Filter



In the pop-up, start the search via “Go” to get all monitoring IDs that are available for the analytical key figure. Optionally, you can restrict the search results by using the available search input fields. Select the applicable monitoring ID.



Filter

Filter Characteristic

	Techn. Name of Characteristic	Characteristic Description	Filter Type
<input checked="" type="radio"/>	MONID	Monid	Regular Filter <input type="button" value="v"/>
<input type="radio"/>			

Select Options

	Sign	Option	Low	High
<input checked="" type="radio"/>	I <input type="button" value="v"/>	EQ <input type="button" value="v"/>	000018622820000	
<input type="radio"/>				

 If you have data (key figures) from e.g. multiple system, you can add more monitoring IDs to the select options via the "Add" button under "Select Options". You will see the data of these key figures combined in one AKFI, i.e. the measured values are added up.

 There are different filter types available: Regular, Runtime, Panel Filters, as well as Filter for Top N Characteristic Values. Depending on the filter type, the select options are filled with default values.

- "Sign" (mandatory) = I (include) or E (exclude)
- "Option" (mandatory) = EQ (equal), BT (between), CP (contains pattern)
- "Low" (mandatory) = fill in a precise characteristic value you would like to exclude or include with the filter
- "High" (optional) = in case you would like to exclude or include a range of characteristics, please maintain a value for "Low" and "High"

- c) Beside the monitoring ID, it is recommended to set a filter on a time characteristic for better performance. This filter has no influence on the displayed value in the tile.

Proceed by adding a filter element as previously described. Via the F4 help, select either one of the time characteristics CALDAY (calendar day), CALWEEK (calendar week), CALMONTH (calendar month). In order to enable a dynamic filtering, these time filters are considered relative filters per default.

Filter

17. Add another filter element

Filter Characteristic

	Techn. Name of Characteristic	Characteristic Description	Filter Type
<input type="radio"/>	MONID	Monid	Regular Filter
<input checked="" type="radio"/>	CALMONTH	Calendar month	Relative Filter
<input type="radio"/>			
<input type="radio"/>			
<input type="radio"/>			

18. Chose a time characteristic such as calendar month (CALMONTH)

Select Options

	Sign	Option	Low	High
<input checked="" type="radio"/>	I	BT	-1	0
<input type="radio"/>				
<input type="radio"/>				
<input type="radio"/>				

19. Define the select options for this relative filter, e.g. from previous (-1) to current (0) month



The value displayed in the tile always depends on the time unit maintained in the Dependency Diagram Setup as explained in chapter Assign AKFIs. The time filter maintained in the AKFI configuration has no influence on that.

- d) Optionally, more filters could be applied to filter on specific values and to restrict the data displayed in the tiles.

As previously mentioned, *Filter for Top N Characteristic Values* could be additionally applied. This enables to filter on only the “N” top values of the selected filter characteristic. When using this in combination with other filters, the “Filter for Top N Characteristic values” needs to be set as the last filter. Otherwise, the framework will not recognize all following filters.

You can delete a filter by selecting it and pressing “Remove Filter Element”.

4.4.1.5 Rating

The last – optional – step in the AKFI setup is to define a rating. The standard rating relates to the default measurement unit of the key figure, such as number of documents/items.

In the below example, if a measured value shows more than 500 documents/items, it is shown yellow, if it shows more than 1.000, it is shown red.

Rating

Standard Rating

Value-Based Rating

20. Optionally, enter a general rating for default units via the tab standard rating and/or for monetary measurements based on a reference currency via the tab value-based rating

General Rating

Red if less	Yellow if less	Yellow if greater	Red if greater
		500	1000

If a KPI contains monetary values, you can also define a value-based rating based on a reference currency.

4.4.1.6 Save

Save your AKFI by pressing "Save".

Create New Analytical Key Figure Instance

21. Save your AKFI by choosing "Save"

Display Copy Save Rename Maintain Connector Instances



An AKFI can be used as a copy template for other AKFIs, if they build on the same analytical key figure. Via the "Copy" button, it is possible to copy the AKFI. The new technical name of the AKFI is always defaulted with "Copy_<name>" and can be adjusted by the administrator.

4.4.2 Create Dependency Diagram and Include AKFIs

The Dependency Diagram in SAP Solution Manager allows to visualize the dependency and relation of multiple key figures amongst each other. Basis for the configuration explained in this chapter are the created AKFIs as described in chapter 4.4.1. In this chapter it is explained how to setup Dependency Diagrams step by step.

4.4.2.1 Add Dependency Diagram

After you have created the AKFIs for your Dependency Diagram, you need to map them into a KPI tree structure you have defined before. Therefore, you need to enter the **Dependency Diagram Setup** tab and select the button "Add" on the upper left of the screen.

1. Navigate to the tab "Dependency Diagrams Setup"

2. Click "Add"

4.4.2.2 Dependency Diagram details

Give the Dependency Diagram a meaningful technical name, so that it is easy to find it later. Special characters should ideally not be used. The name of the Dependency Diagram should reflect its content and stakeholder.



Good names following the naming convention:

<Stakeholder><Global / Local (e.g. one System, / Company Code)><Module Prefix><Content>

e.g. FSSC_Global_Overview_DSO

Give the Dependency Diagram a meaningful description. Here special characters are allowed. The description should be easy to understand and your companies wording.

Change the authorization group. In our example the global Dependency Diagram should be visible everyone and we assume that the authorisation group was already maintained as explained in the documentation “Business Process Improvement Administration in SAP Solution Manager 7.2 SP11”, which can be found in the Business Process Improvement Wiki under tab “Technical Information”. Therefore, “Authorisation Group” = “Public” is selected.

1. Select a technical name

2. Define a meaningful description

3. Change the authorization group

Level i...	Tech...	Tile Title	Tile Su...	Is Child...	AKFI Tec...	AKFI D...	Default...	Currency	Time Unit	Custom...

Select “Add” in the “Assign Tiles and Their Relations” table to create the Dependency Diagram tile structure. A new pop-up will open. Give a technical name to the first tile. In this example the name is “Root”. Select “OK” to add the first tile to the Dependency Diagram.

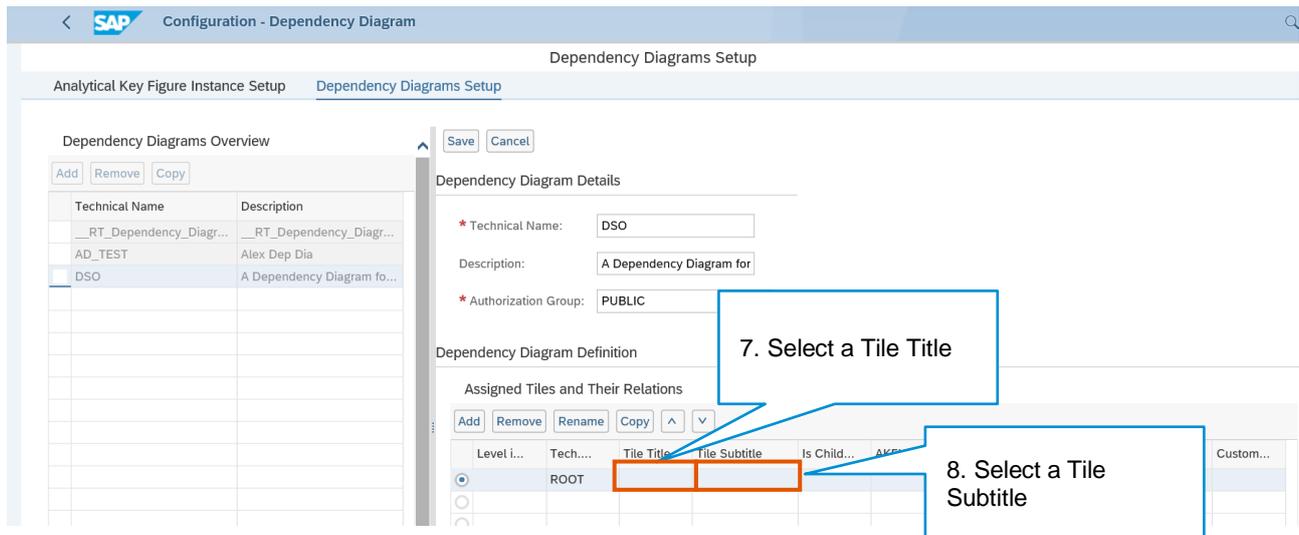
4. Click on button “Add”

5. Enter a name for the new tile

6. Press button “OK”

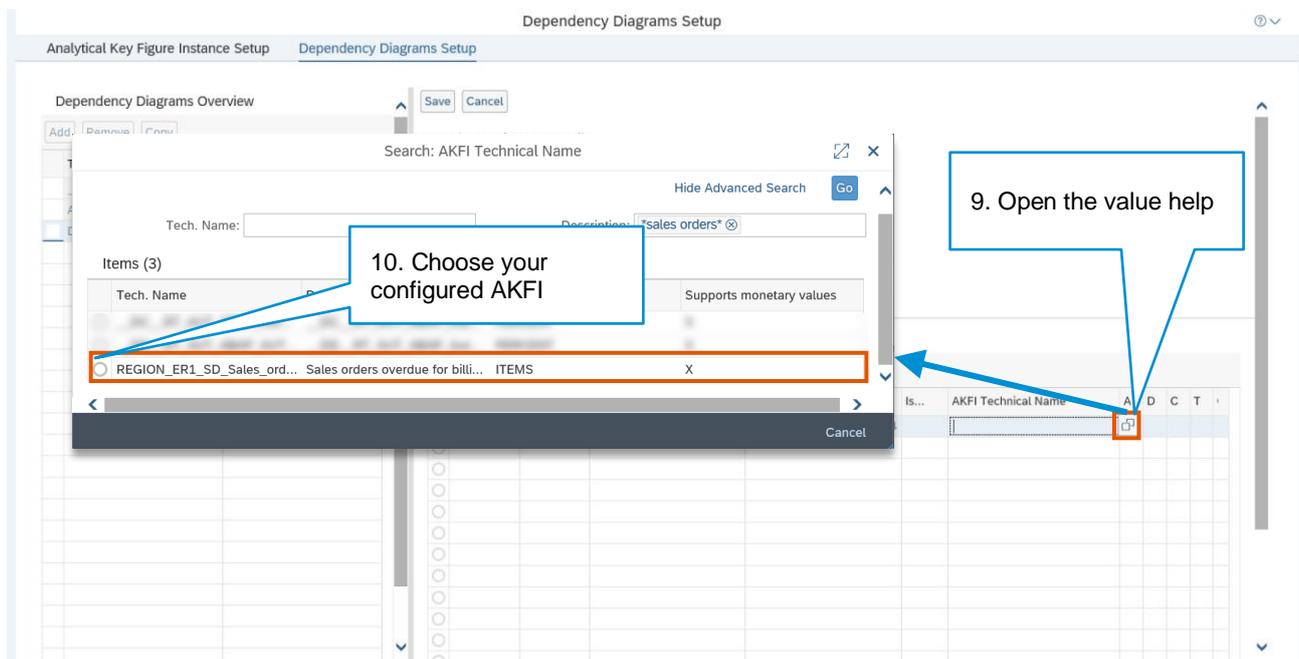
Level i...	Tech...	Tile Title	Tile Su...	Is Child...	AKFI Tec...	AKFI D...	Default...	Currency	Time Unit	Custom...

Give the tile a meaningful “Tile Title”. The tile title will be displayed as black text in the tile in the Dependency Diagram. Also do the same for the “Tile Subtitle”. The tile subtitle will be displayed as grey text below the tile title in the tile in the Dependency Diagram.



4.4.2.3 Assign AKFIs

Select the AKFI created in Create Analytical Key Figure Instances (AKFIs) for the corresponding key figures from the value help. This step will influence the number that will be shown in the tile on the Dependency Diagram. The colouring of the number (grey, yellow, red or green) depends on the rating maintained in the AKFI.



Repeat steps 4.-10. to create tiles for the remaining key figures.

Create the Dependency Diagram tree structure by using the column “Is Child of Tile”: The “Root” tile will be the first tile in the dependency tree and all other tiles need to be structured under it by either being a child of root or any other child of root.

Dependency Diagram Definition

Assigned Tiles and Their Relations

Level i...	Tech...	Tile Title	Tile Su...	AKFI T...	AKFI De...	Default...	Currency	Time Unit	Custo...	Is Child...
ROOT	ROOT	DSO	Days Sales (ROOT
1	SalesOrd...	Sales orders overdue > 30 REGION_ER	Sales orde...			ITEMS				ROOT
1	FIARover...	Customer ite open and ov REGION_ER	Open over...			ITEMS				ROOT

10. Add the tree structure by filling "Is Child of Tile"

How the tiles will be displayed in Dependency Diagrams



It is also possible to change the unit to default unit monetary values. Click on the value help for the "default values" and change it to "Monetary Value".

Dependency Diagram Definition

Assigned Tiles and Their Relations

Level i...	Tech...	Tile Title	Tile Su...	AKFI T...	AKFI De...	Default...	Currency	Time Unit	Custo...	Is Child...
ROOT	ROOT	DSO	Days Sales (
1	SalesOrd...	Sales orders overdue > 30 REGION_ER	Sales orde...			ITEMS				ROOT
1	FIARover...	Customer ite open and ov REGION_ER	Open over...			ITEMS				ROOT
2	also					ITEMS				FIARoverdue

Search: Default Unit

Items (2)

- Unit
- ITEMS
- Monetary Value

Cancel

Additionally, you can enter your own Custom unit, which has only an impact on the displayed unit in the tile.

Dependency Diagram Definition

Assigned Tiles and Their Relations

Level i...	Tech...	Tile Title	Tile	AKFI T...	AKFI De...	Default...	Currency	Time Unit	Custo...
ROOT	ROOT	DSO	Day						
1	SalesOrd...	Sales orders ove				ITEMS			
1	FIARover...	Customer ite ope				ITEMS			
2	also					ITEMS			FIARove

Sales orders overdue for billing overdue > 30 days

Analysieren

89

0% (Apr. 10)

My own unit

Besides that, it is possible to change the time unit. Initially the time unit is "Week", which can be changed to "Month" via the value help.

Dependency Diagram Definition

The screenshot shows the 'Assigned Tiles and Their Relations' table with columns: Level i..., Tech..., Tile Title, and Tile Su... The table contains four rows, with the second row selected. A search dialog titled 'Search: Time Unit' is open, showing 'Items (2)' with radio buttons for 'Week' and 'Month', where 'Month' is selected. A blue arrow points from the 'Month' selection to a table of customer units. This table has columns: Custo..., Is Child..., and Time Unit. The first row 'My own unit' is highlighted, and its 'Time Unit' field is also highlighted.

 The time filters optionally available in the AKFI are always ignored because predetermined time filters are used for the data query within the tile (as mentioned in the chapter Filter)

- For AKFIs with corresponding key figures that have a backlog categorization, the last measured value from the last week / month is the output as the measured value and the last measured value from the penultimate week / month is used to calculate the trend.
- For all other categorizations (throughput, average count, etc.), the sum of the last week / month is the output as a measured value, and the sum of the penultimate week / month is used to calculate the trend.

4.4.2.4 Save

Finally select “Save” to save the Dependency Diagram.

The screenshot shows the SAP Configuration - Dependency Diagram interface. The 'Dependency Diagrams Setup' section is active, showing a 'Save' button highlighted with an orange box. A blue callout box with the text '11. Press the “Save” Button' points to the 'Save' button. The 'Dependency Diagram Details' section shows fields for Technical Name (DSO), Description (A Dependency Diagram for), and Authorization Group (PUBLIC).

A Dependency Diagram with all key figures has been created and can now be viewed.

4.4.2.5 Start

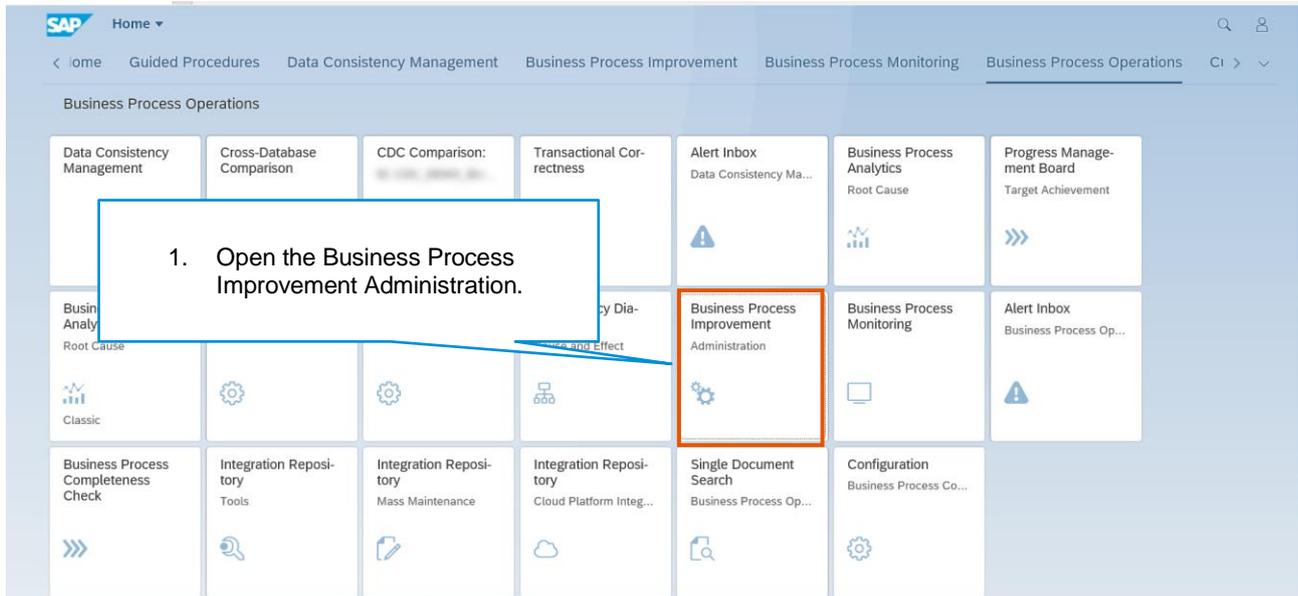
You can view your configured Dependency Diagram via the tile “Dependency Diagrams” in the Solution Manager Launchpad, as described in chapter 5.1.

4.5 Incorporate overarching business goal from Business BI

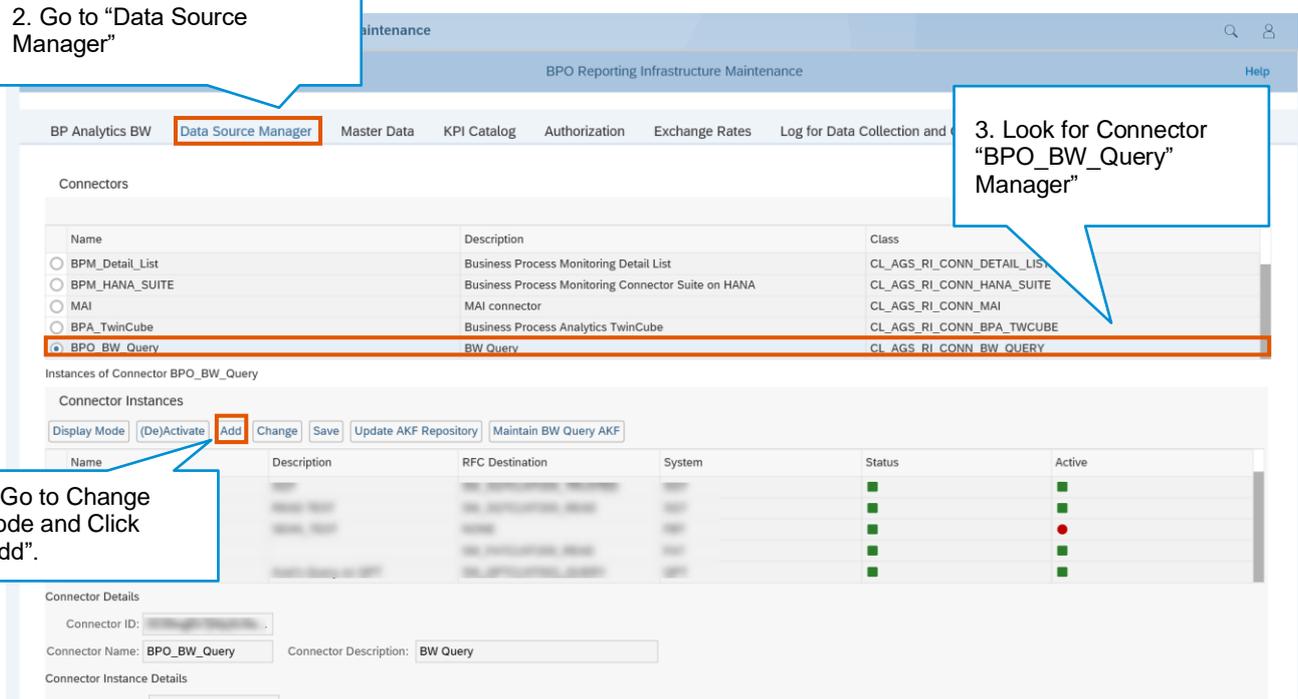
A big advantage of the Dependency Diagrams is that you can connect the problem oriented world of BP Analytics with your BW reporting. In this way, you can easily visualize how the key figures can have an impact on your overarching Business Goal like Days Sales Outstanding which will be measured in BW. For this purpose you need a BW Query with the information you want to visualize in the Dependency Diagrams. This can be done with the BW Connector.

4.5.1 BW Connector Setup

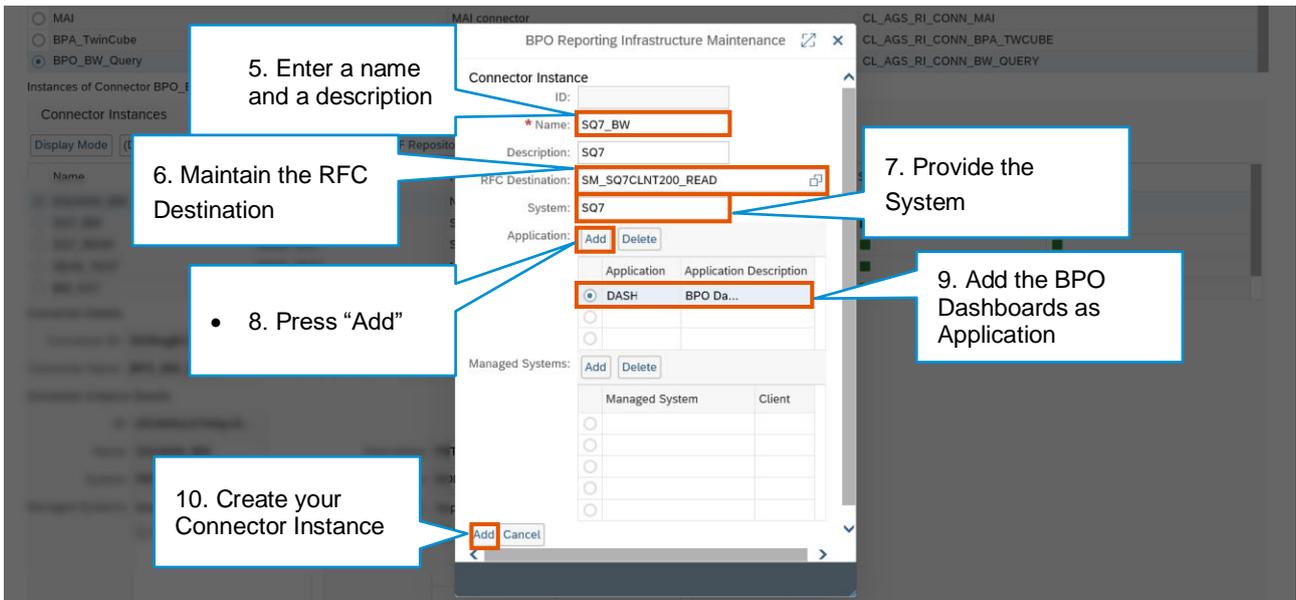
As of SAP Solution Manager 7.1 SP13, a BW Query Connector is available which you can also use for the Dependency Diagrams. You will find under the tab “Business Process Operations”, in the tile “Business Process Improvement Administration”.



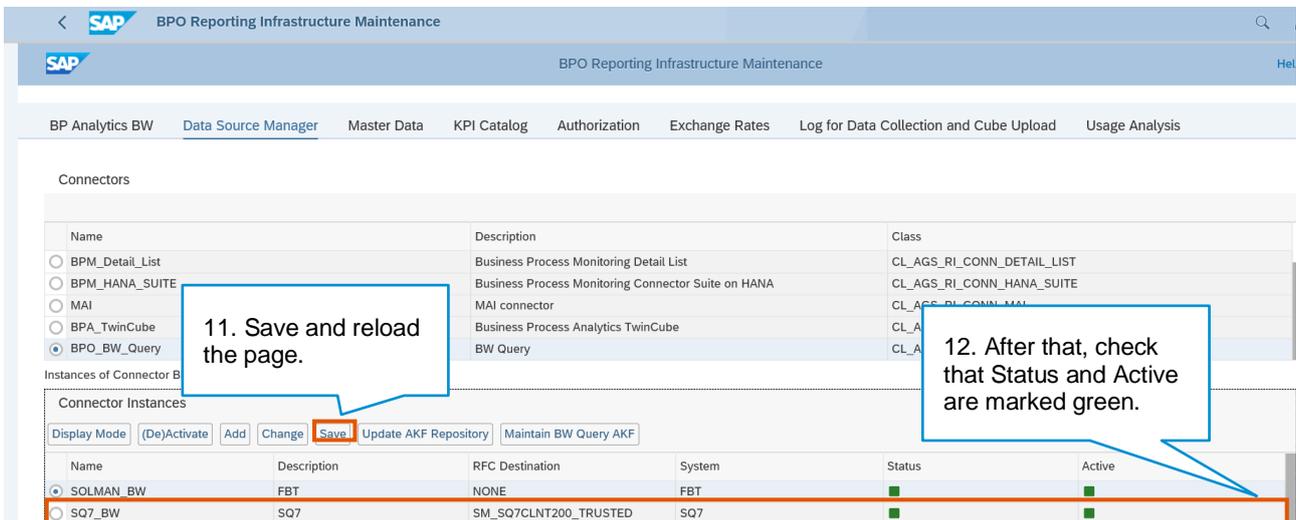
Then navigate to “Data Source Manager”, under “Connector” you will find the BW Query Connector called “BPO BW Query”. After marking this entry, go to the Change Mode and click on “Add”.



Then you can maintain a Name and a Description for the Connector Instance. After that, select the Read RFC Connection to your BW system and enter the system Name. Under Application, you add the BPO Dashboards as Application by clicking on ‘Add’. Create your Connector Instance with clicking on “Add” right at the bottom from the popup.



After saving, if you reload the tab you should see two green lights under Status and Active.

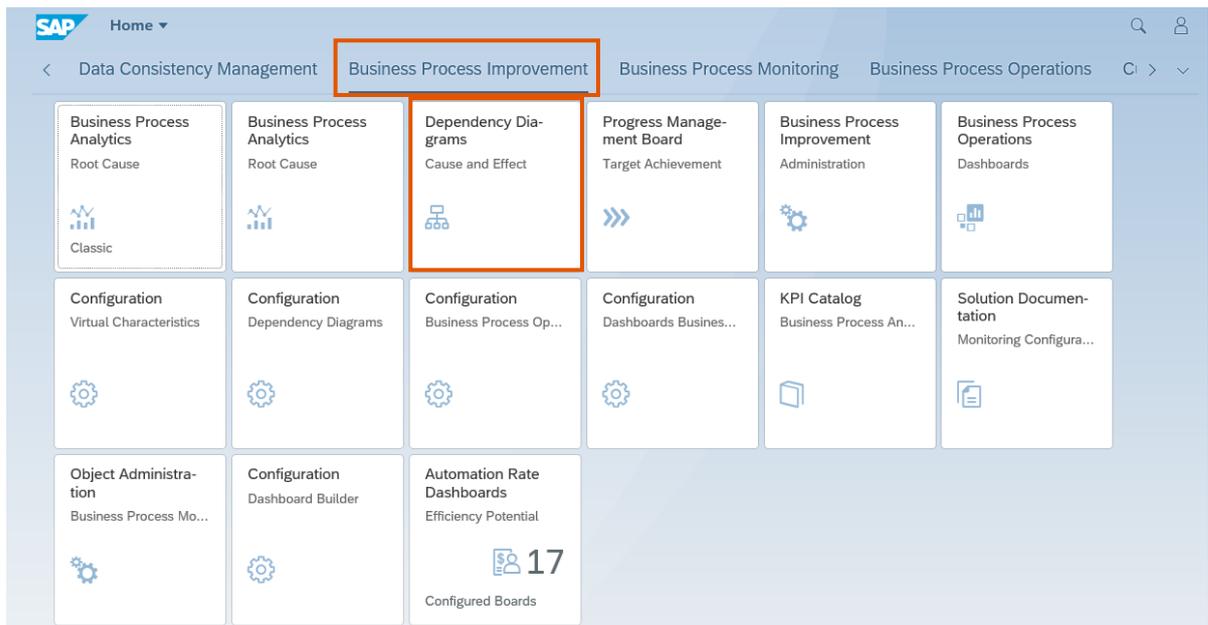


The next step is to maintain a so called BW Query AKF by clicking the button Maintain BW Query AKF on Tab "Data Source Manager".



On the following screen, click 'Add'. Now you can enter a technical name and a description. After that, select the Connector Instance you created before. Use the F4 Help to find your BW Query. The Info Cube will be automatically selected if you add the Query. Also use the F4 Help to select the key figure. This is basically the measurement coming from the Query (i.e. the amount of days in this example). As a last step, click "Save".

- The corresponding tile in the SAP Solution Manager Launchpad (transaction SM_WORKCENTER): in the launchpad, navigate to the tab *Business Process Improvement* and click on the tile **Dependency Diagrams Cause and Effect**.

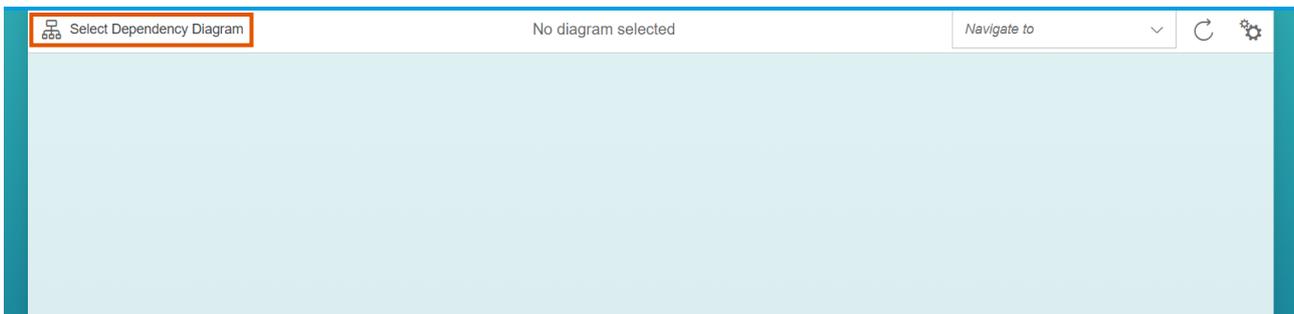


 If you cannot see the tab *Business Process Improvement* in the launchpad, your user still needs the role(s) *SAP_SMWORK_BASIC* and *SAP_SMWORK_BPO*.

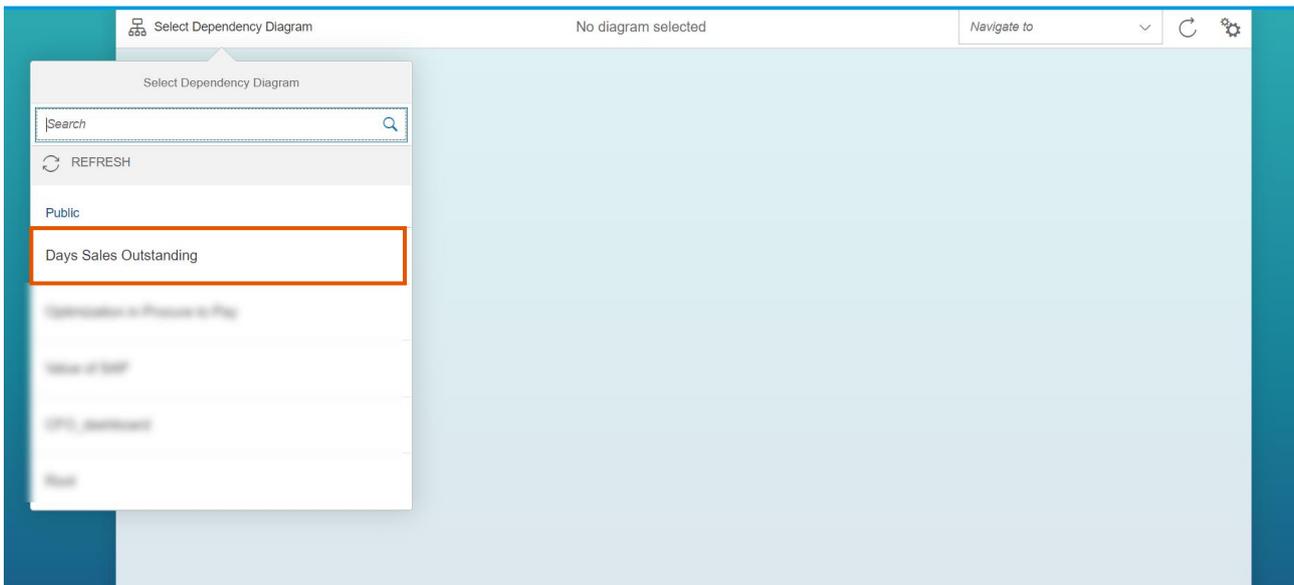
- An URL (either to the Dependency Diagram application or directly to a specific key figure tree).

5.1.1 Selecting a key figure tree

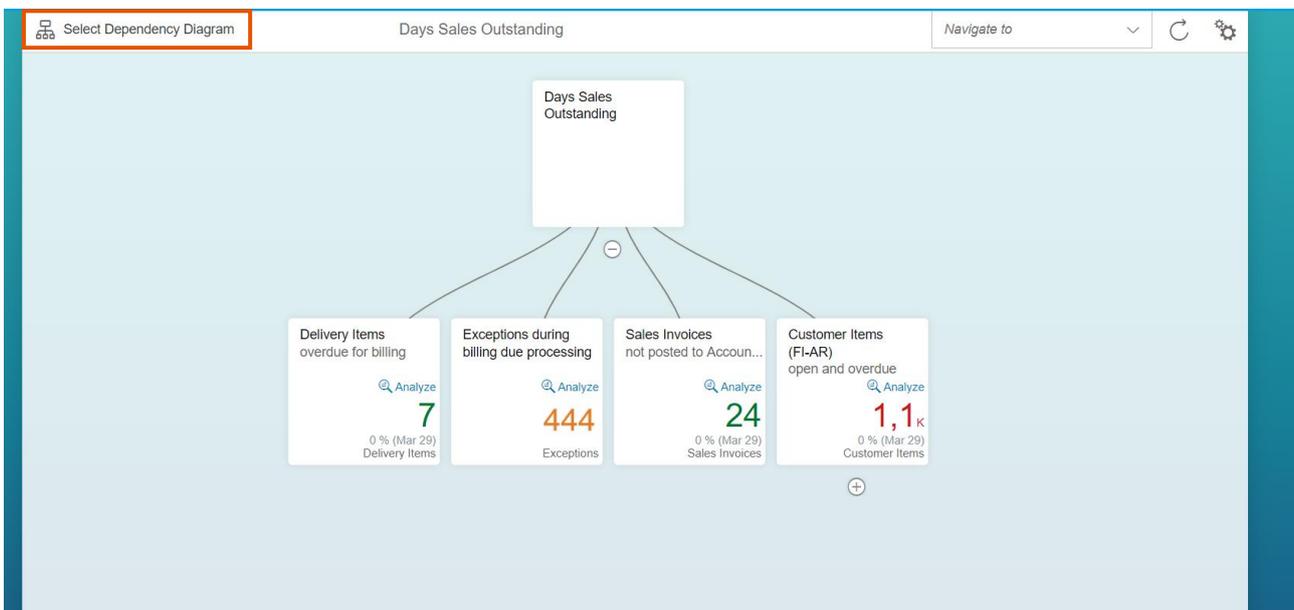
After accessing the Dependency Diagram application, you can select the key figure tree that shall be opened. After clicking on the “Select Dependency Diagram” Button on the top left corner of the browser window, a list with all the key figure trees for which you are authorized is displayed:



In case there is a high number of key figure trees available, you can restrict the search results by using the search functionalities. By clicking on the Dependency Diagram name, it is opened.



You can easily switch between the different key figure trees by using the above “Select Dependency Diagram” button.

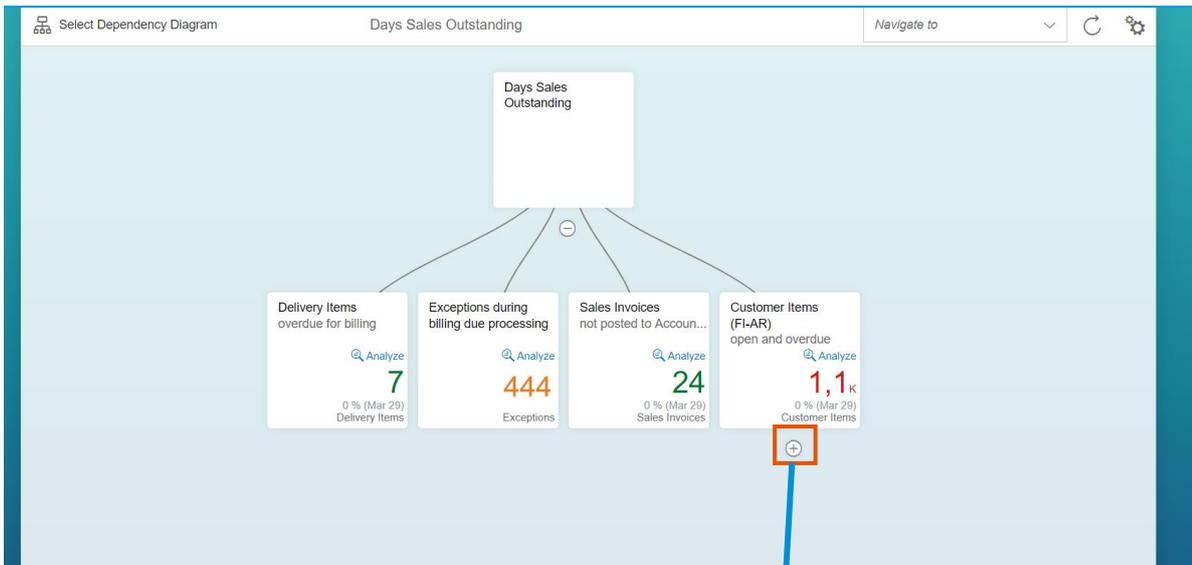


If there is no Dependency Diagram displayed, then it should be checked if at least one key figure tree has been configured by the administrator, and/or if you are authorized to see at least one of the configured key figure trees.

This step is not needed when a specific key figure tree is directly accessed.

5.1.2 Expand a key figure tree

When looking at a key figure tree that has more than two hierarchy levels, you have the possibility to expand the tree. At the initial start, the Dependency Diagram has only two stages. A small plus icon indicates that there is the option to expand the key figure tree for this particular tile. This helps to see more operational key figures that influence the above tile.

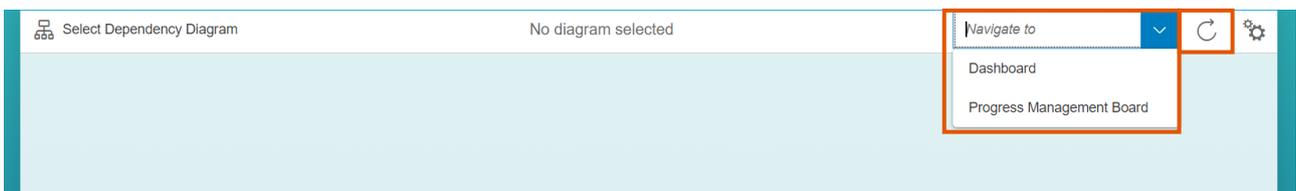


5.1.3 Links and Refresh

In the top right corner of the Dependency Diagram application, several buttons are available. Via the “Links” button, you can navigate to the applications *BPO Dashboards* and *Progress Management Boards*.



There is no handover of content – the applications are simply started.



A “Refresh” button is available to update the information of all tiles within the currently shown key figure tree.

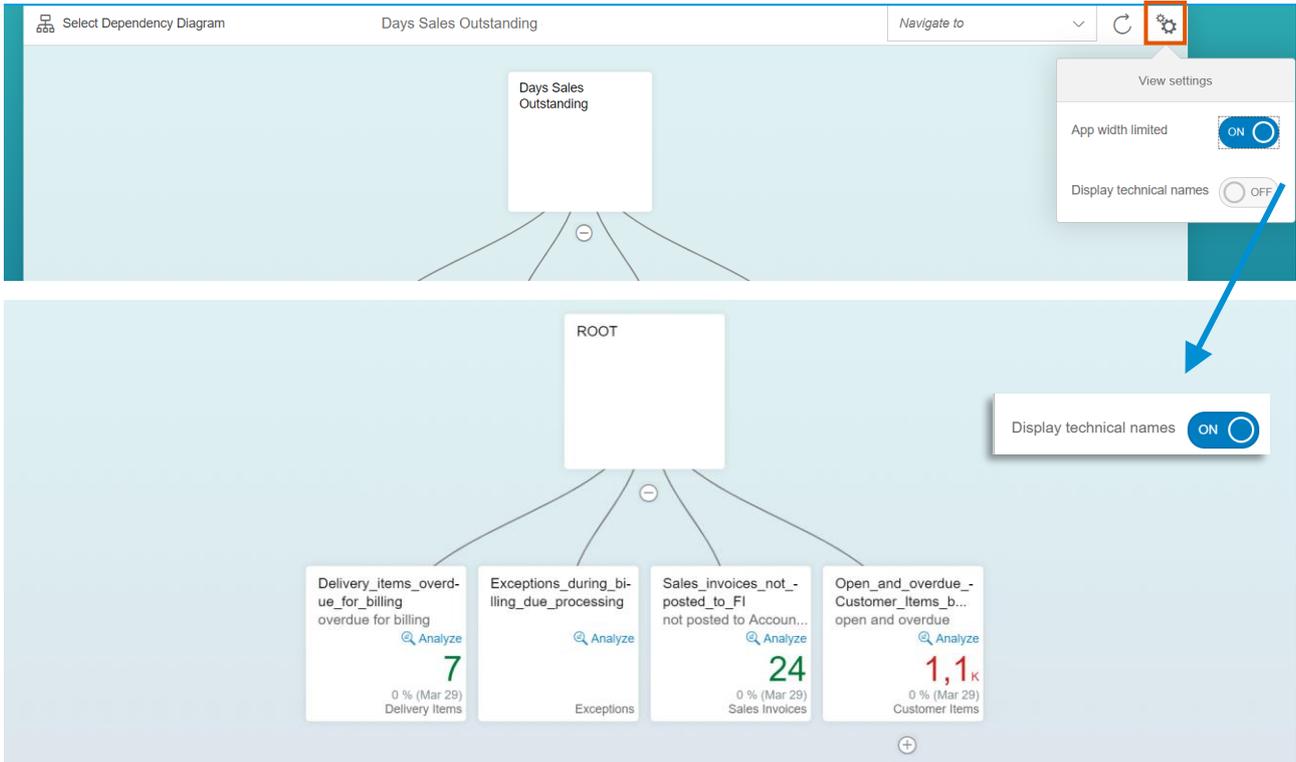
5.1.4 Deriving Insights

In the following, the different functionalities to derive insights from a key figure tree and AKFI respectively are explained.

A colored rating (consisting of red, yellow, green) is also applied, according to the rating configured in the corresponding AKFI. As previously described, this rating can be used to highlight focus areas for improvement activities.

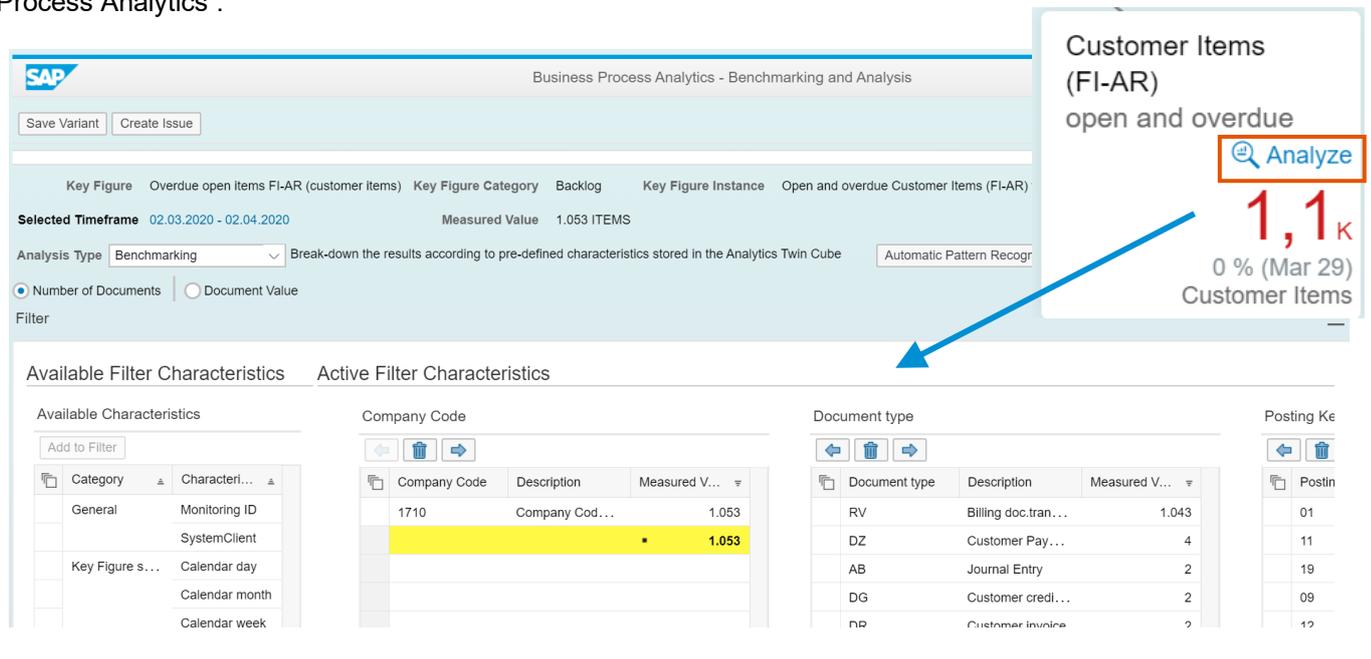
5.1.4.1 Display technical names

Via the settings on the right top of the page, you can switch between displaying the keys (technical names) and texts (descriptions). With the toggle Button you can decide if you want to see the technical names or not. Besides that, you can limit the App's width.



5.1.4.2 Jump to Business Process Analytics

The button “Analyze” can be used to jump from a tile to the corresponding key figure in the tool “Business Process Analytics”.

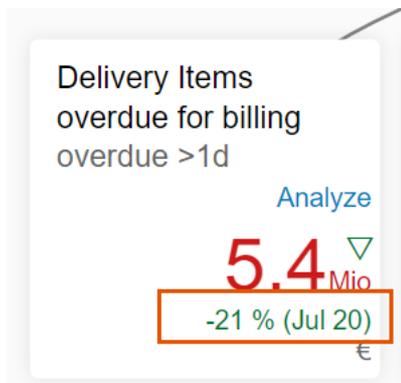




The filters used in the setup of an AKFI are also valid after the navigation from a tile to Business Process Analytics. Here, the user is not able to change these filters. As already mentioned in [chapter Filter](#) the time filters are not used for the data query within the tile. But when jumping to BP Analytics from the tile, those time filters are applied to the key figure. Nevertheless the time filter in BP Analytics can be changed on the contrary to the other filters.

5.1.4.3 Historical Values in the tiles

Looking at the tiles in a Dependency Diagram, a percentage value below the measured value of the key figure can be found.



These percentage values refer to the previous period and its corresponding measurement in order to show the trend how the KPI evolves. “-21 %” means that the current value is 21 % lower than the value of the previous period. “Jul 20” is the time range of the previous period (in our example the day before but can be also last week or last month, this depends on the key figure type).

The value shown in the tile is always from the last complete period data selection (= current period) which is technically CALDAY (or CALWEEK/CALMONTH) - 1, therefore the percentage value refers to CALDAY (or CALWEEK/CALMONTH)- 2.

If no such percentage value is shown, it is possible that there is no data available yet or that the key figure doesn't have this functionality as it is an old key figure with no selection criteria for the time frame.

6 TROUBLESHOOTING

In the following, common pitfalls and possible causes are explained. If the described possible causes do not help you with troubleshooting the issue, please open an SAP incident for component SV-SMG-MON-BPM-DAS.

6.1 No data displayed in tile

Symptom: No data (at all / for a specific key figure) is displayed in a tile assigned to a Dependency Diagram

Possible Cause: For the missing AKFI, no data might be available in the data source for the applied selection/filter criteria.

6.2 Failures in updating Dependency Diagram Tiles

Symptom: You see that the tile information within a configured Dependency Diagram isn't being updated as expected.

Possible Cause: Clear the Internet browser cache of the Internet browser application used to display the dependency diagram. For instructions on this, please see the following KBA: [2264167 To clear browser cache and cookies in Internet Explorer, Chrome and Firefox](#)

6.3 Data inconsistencies when comparing BP Analytics with Dependency Diagrams

Symptom: In a tile in a key figure tree, you use an AKFI for which the measured values differ from those displayed in Business Process Analytics.

Possible Cause: The time filters used in the AKFI have no influence on the displayed value in the tile. Those time filters optionally available in the AKFI are always ignored because predetermined time filters are used for the data query within the tile (as mentioned in the chapter [Filter](#))

- For AKFIs with corresponding key figures that have a backlog categorization, the last measured value from the last week / month is the output as the measured value and the last measured value from the penultimate week / month is used to calculate the trend.
- For all other categorizations (throughput, average count, etc.), the sum of the last week / month is the output as a measured value, and the sum of the penultimate week / month is used to calculate the trend.

But if you then click on the “Analyze” Button in the corresponding tile to jump into BP Analytics, those filters are applied. Which means that in the BP Analytics and in the Dependency Diagrams the time filters on the key figure most likely differ.

6.4 Functions Age Analysis and Advanced Benchmarking Cannot Be Used in Business Process Analytics

Symptom: You launch the button “Analytics” out of a tile in Dependency Diagrams and you select the functions “Age Analysis” or “Advanced Benchmarking”, but you get an error message “MONID is not unique”.

Possible Cause: This symptom occurs with AKFIs including key figures for which different monitoring objects were set up and activated, AND if the AKFI has no filters configured on *Monitoring ID* (see chapter [4.4.1.4](#)).