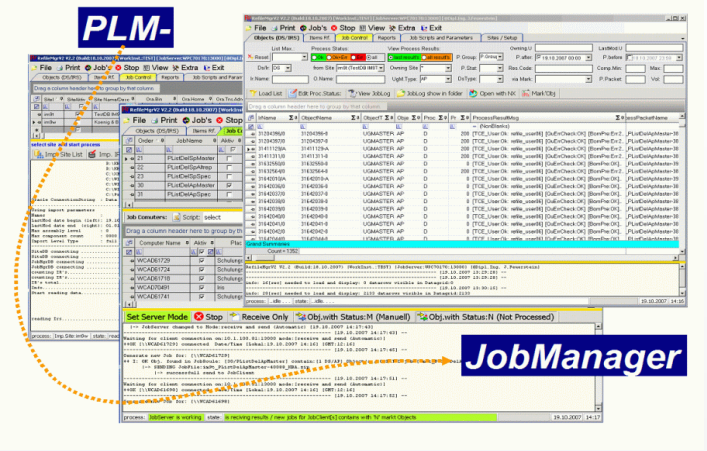

Documentation:
TC – NX Data Quality Check

Created by : J.Fes / S.Gueth
Creation Date : 18.02.2016
Last Update : 11.07.2018 / J.Fes
With support of : BSH.: Mr. Krzysztof Duszkiewicz
: ASML: Mr. Jos Dierkeling

Content

Overview TC - DataCheck

MSC: Identify Data to Sync

MSC: Multi-Site Consistent Check

MSC:Check Rules

MSC: Completeness Analyse

MSC: Integr. in PLMJobManager

DQC: TC data quality check for NX related data

Glossar Keys: **MSC**: Tc - Multisite Check // **DQC**: Tc - Data Quality Check

Methods for Analyse MultiSite Data Migration and Consistent Check

PLMJobManager provides 3 Methods for Multisite-Data checks and MultiSite Migrations

1 **List Objects that need to be transfer or updated from 'Source Site' to 'Target Site'**

This Method can be used to get a list of all Objects that need to be transfer or Updated from **'Source Site'** into **'Target Site'**

2 **MultiSite Consistent Check (MCC)**

This Method can be used to check the Data Consistent between TC Sites.
It analyses the existing Multisite - Data via Check Rules.

3 **MultiSite Completeness Analyse (MCA)**

This analyse checks if transferred Objects from **'Source Site'** to **'Target Site'** is complete transferred.
It is used to **review** the current 'TC-MultiSite Data-Quality' between Sites
It is used to **check the result** of DataShare process during MultiSite migration phase.

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MultiSite Consistent Check

List of Check Rules

Status	Check	Naming in JobMgr
1.0	ItemID/ItemPuid Owings Site consistency	ItemId/ItemPuid incon.
1.2	Item Type inconsistency	Item Type incon.
2.0	Owning Site has Export Record inconsistency	Owning Site has Export Record incon.
2.1	if no item exists with same ItemID and same ItemPUID on every site	ItemID/ItemPUID not consist on all Sites
3.0	if all Items with same ItemID and same ItemPUID exists on each exportedTo Site	exportedTo and Ownings Sites are inconsistent
4.0	if all itemRevIDs from Owning Site Item exists on each exported site with the same puid and the same itemRevID	itemRevIDs not consist on all Sites
4.1	ItemRev Release Status consistent	ItemRev Release Status are inconsistent

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Multi-Site Consistent Check: Check Rules

Check (1) Item Owings Site consistent

→ Checks if the processed Item has one owning site object
→ And if there are no other items with the same ItemID and an other Item-PUID
→ And if there are no other items with an other ItemID and the same Item-PUID

Example for [TRUE]: → goto Check (2)

ItemId	PuiD	fSiteID	oSiteId	exportToSiteIds
01	P01	VDH	VDH	SAN:WLT
01	P01	SAN	VDH	
01	P01	WLT	VDH	

SiteObject Item does not exist

Example for [FALSE]: → Mark Item as OutOfSync + local created in ACE

ItemId	PuiD	fSiteID	oSiteId	exportToSiteIds
01	P01	VDH	VDH	SAN;WLT
01	P01	SAN	VDH	
01	P01	WLT	VDH	
01	**P02**	ACE	ACE	

Item with same ItemID and other PUID exists

Example for [FALSE]: → Mark Item as OutOfSync because Object is missing in Owing Site

ItemId	PuiD	fSiteID	oSiteId	exportToSiteIds
01	P01	SAN	VDH	
01	P01	WLT	VDH	
01	Ü01	ACE	VDH	

Example for [FALSE]: → Mark Item as OutOfSync because Object is renamed (diff ItemID) in Owing Site

ItemId	PuiD	fSiteID	oSiteId	exportToSiteIds
02	P01	VDH	VDH	SAN;WLT;ACE
01	P01	SAN	VDH	
01	P01	WLT	VDH	
01	P01	ACE	VDH	

Multi-Site Consistent Check: Check Rules

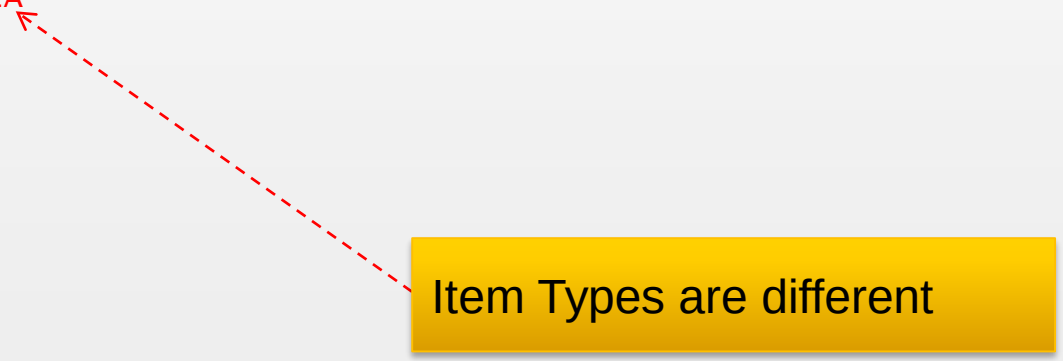
Check (1.2) ItemType consistens
→Checks if all Items on each site have the same ItemType

Example for [TRUE]: → goto Check (2)

ItemId	PuiD	fSiteID	oSiteId	ItemType
01	01	VDH	VDH	Item
01	01	SAN	VDH	Item
01	01	WLT	VDH	Item

Example for [FALSE]: → Mark Item as OutOfSync 1.2

ItemId	PuiD	fSiteID	oSiteId	ItemType
01	01	VDH	VDH	Item
01	01	SAN	VDH	Item
01	01	WLT	VDH	CATIA



Check (2) if Owning Site has Export Record

Example for [YES]: → goto Check (3)

ItemId	PuiD	fSiteID	oSiteId	exportToSiteIds
01	01	VDH	VDH	SAN:WLT
01	01	SAN	VDH	
01	01	WLT	VDH	

Example for [NO]: → goto Check (2.1)

ItemId	PuiD	fSiteID	oSiteId	exportToSiteIds
01	01	VDH	VDH	
01	01	SAN	VDH	
01	01	WLT	VDH	
01	01	ACE	VDH	

Multi-Site Consistent Check: Check Rules

Check (2.1) if no item exists with same ItemID and same ItemPUID on every site
→ this check only appears when check(2) was [NO]

Example for [TRUE]: → Mark Item as candidate

ItemId	PuiD	fSiteID	oSiteId	exportToSiteIds
01	01	VDH	VDH	

Multi-Site Consistent Check: Check Rules

Check (3) if all Items with same ItemID and same ItemPUID exists on each exportedTo Site

Example for [TRUE]: → goto Check (4)

ItemId	PuiD	fSiteID	oSiteId	exportToSiteIds
01	01	WLT	WLT	VHD
01	01	VDH	WLT	ACE;SAN → is HubSite
01	01	ACE	VDH	
01	01	SAN	VDH	

Example for [FALSE]: → Mark Item as OutOfSync

ItemId	PuiD	fSiteID	oSiteId	exportToSiteIds
01	01	WLT	WLT	VHD
01	01	VDH	WLT	ACE;SAN
01	01	SAN	VDH	

Item from Site ACE
is missing

Multi-Site Consistent Check: Check Rules

Check (4) if all itemRevs from Owning Site Item exists on each exported site with the same PUID and the same itemRevID

Example for [TRUE]: → goto Check 4.1

ItemRevId	ItemRevPuiD	fSiteID	oSiteId	exportToSiteIds
01/01	012	VDH	VDH	WLT
01/02	023	VDH	VDH	WLT
01/01	012	WLT	VDH	
01/02	023	WLT	VDH	

Example for [FALSE]: → Mark Item as OutOfSync

ItemRevId	ItemRevPuiD	fSiteID	oSiteId	exportToSiteIds
01/01	012	WLT	WLT	VDH
01/02	023	WLT	WLT	VDH
01/01	012	VDH	WLT	SAN
01/02	023	VDH	WLT	SAN
01/01	012	SAN	VDH	

ItemRev 01/02 is missing in SAN

Multi-Site Consistent Check: Check Rules

Check (4.1) if all itemRevs from each site have the same Release Status

Example for [TRUE]: → Mark Item as candidate

ItemRevId	ItemRevPuiD	fSiteID	oSiteId	release state
01/01	012	VDH	VDH	released
01/02	023	VDH	VDH	
01/01	012	WLT	VDH	released
01/02	023	WLT	VDH	

Example for [FALSE]: → Mark Item as OutOfSync

ItemRevId	ItemRevPuiD	fSiteID	oSiteId	release state
01/01	012	WLT	WLT	released
01/02	023	WLT	WLT	
01/01	012	VDH	WLT	released2
01/02	023	VDH	WLT	

Consistent Check: Check Rules

Results:

MSC.00.OK : Objects are in sync
MSC.10.ERR : More then one OwningSite Object exist (Duplicated Items)
MSC.11.ERR : No OwningSite Object exist
MSC.12.ERR : Item with same ItemId and different puid or Item with same puid and different ItemId exist
MSC.13.ERR : Items have different Item types
MSC.14.ERR : OwningSite-Item has no export record, but Items with same ItemId exist
MSC.15.ERR : There is not only exactly one item for each export record
MSC.16.ERR : The release statuses of items are different
MSC.21.ERR : IRs on remote site are different then on OwningSite
MSC.22.ERR : Release status of item revisions are differnet
MSC.31.ERR : Datasets on remote site are different then on OwningSite
MSC.32.ERR : Release status of datasets are different

Attention: Site Groups have to be defined in Sites/Data Import -> Admin -> 2 - Edit 'MultiSite-Groups' settings

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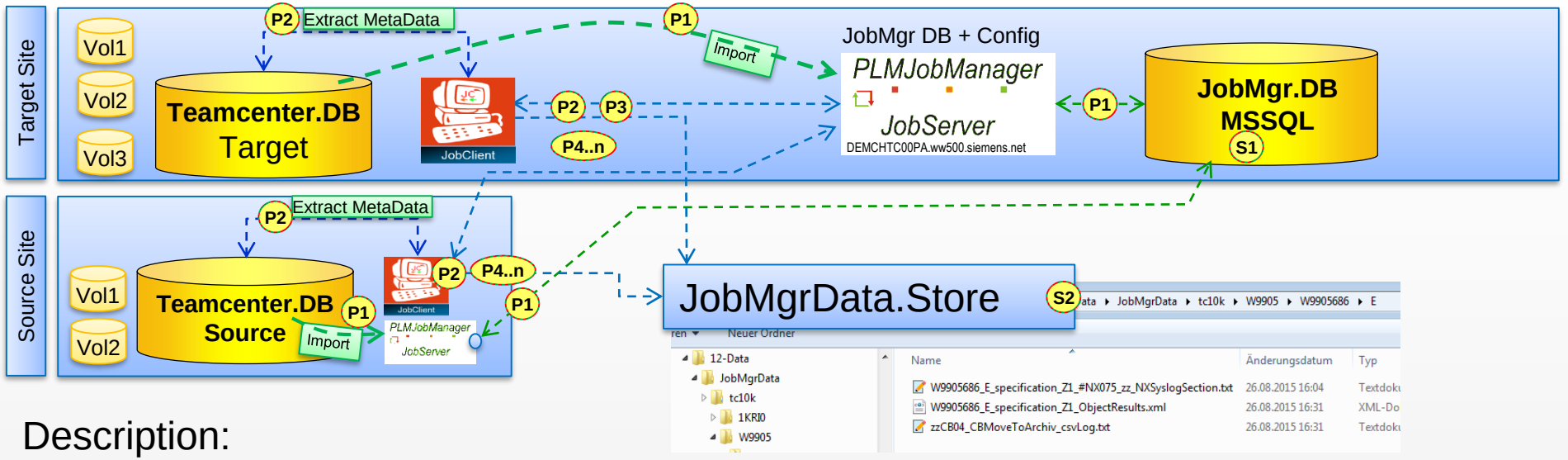
Completeness Analyse Base Concept and System Sketch



Description:

TC MetaData import to JobMgr.DB

- Import Data **(P1)** into JobMgr.DB **(S1)** During Import a Base Analyses will be done.

Process Completeness Analyse:

- Extract Data **(P2)** from TC.DB and save them into **TCMetaData.xml** files **(S2)**
  Action will be done “based on ItemId’s” via JobClients located on the Sites
- Analyse Data **(P3)** based on JobMgr.DB Data and **TCMetaData.xml** files **(S2)**
  Results will be evaluated by the defined ‘Check-Rules’ and send to JobManager
- Depending on Issues Run CleanUp Actions (P4…Pn)
  and Run Steps **P1 → P2 → P3** again

Legend:
P1..3 Process Step
S1..2 Store

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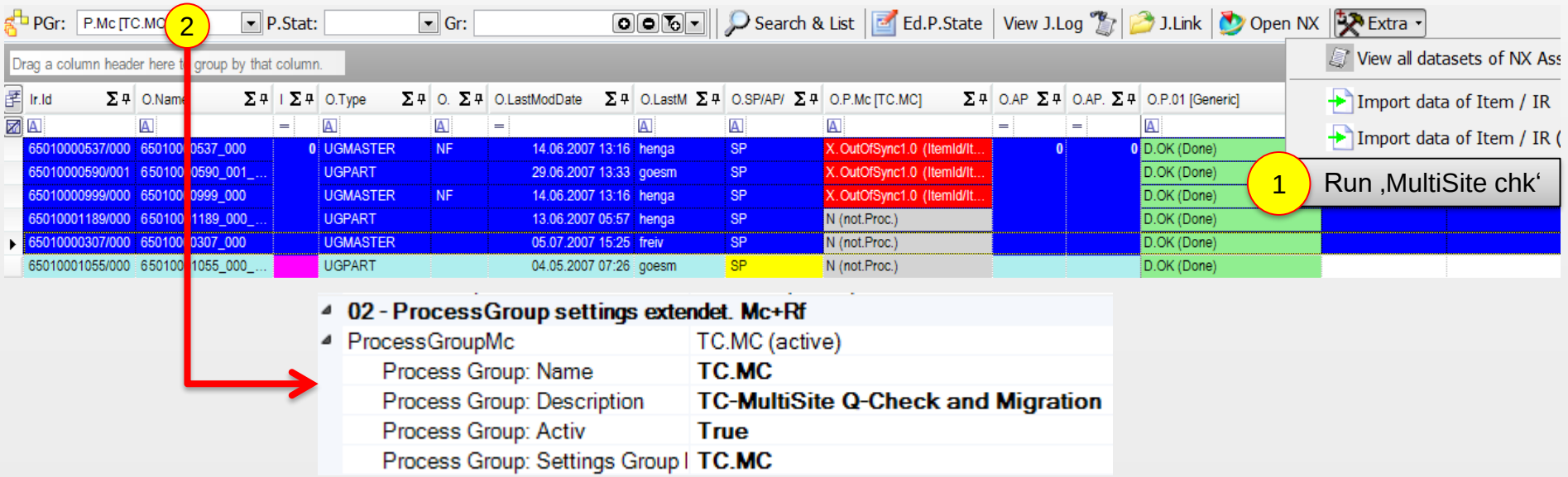
PLMJobManager Integrations

New Functions

- Integrate Multi Site Check in JobManager GUI **(1)**
  → is working against a Process Group MC **(2)**
- Integrate Multi Site Check in TaskMgr to Check automatically after update Data in JM.DB
- Define JobRules to Run Repair processes to solve MC issues
- Get easy and fast way to Update JM.DB Data on Remote Sites
- Easy way to run a free custom SQL Script in JM.DB



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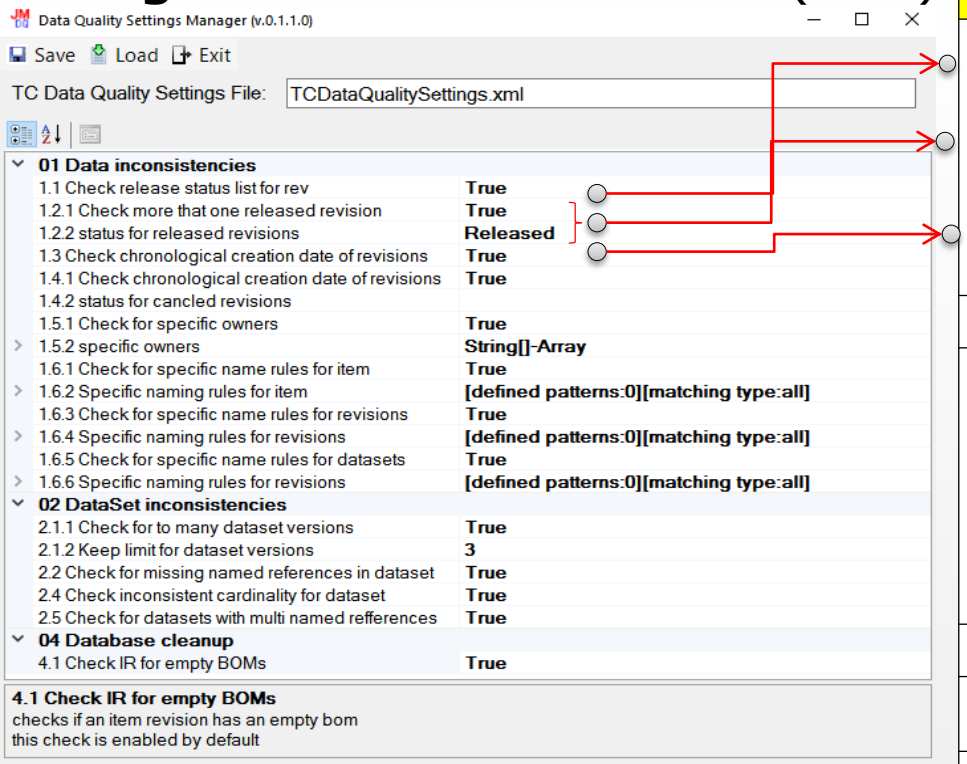
TC Data Quality Check Details

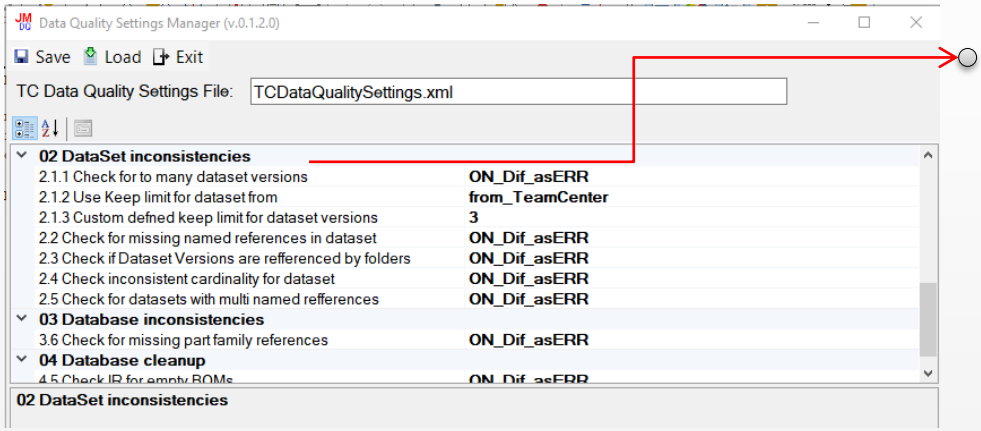
Categorization of the issues (1of3)



Pos	Description:	Note	ResultCode
1	**Data inconsistencies**		
1.1	Chk. Release Status: Incorrect Status List (inside one revision)	direct TC.DB access compare status of IR, datasets, BOMview etc. Defining filter what objects have to be compared Check 1: check if release status of IR and datasets are the same Check 2: check if last release status of ir and second last release status of ir are compatible	Check 1: 111 Check 2: 112
1.2	More than 1 Revision with status "Released" for 1 Item	JobMgr.DB	120
1.3	Wrong Release Date on Revision and Status	direct TC.DB access Defining filter what objects have to compared Rules. .: Check ‚Date Order' by IR.ID ‚Alpha Order' Objects.: Inc. Filter by Type of objects Example.: A1 Date.Cr < A2 Date.Cr A1 Date.Rel < A2 Date.Rel A2 Date.Cr < A3 Date.Cr A2 Date.Rel < A3 Date.Rel	Release Date 131 Creation date 132
1.4	Inconsistent Owning Site under an Item	Already existing based on JobMgr.DB/MCC Leave it as it is	
1.5	Owning Users: Complete the admin user cleanup	Mark everything which is owned by specified users	150
1.6	CADItemRevisions renamed by migration team	Check for Item/ItemRevision/Dataset naming convention	I:161 IR:162 DS.:163
1.7	Comp Release.Obj Date and Release Date on I/IR/DS New:30.04.2018 S.Gueth	WRN_202_RelDateIrToStatusObjDif appears when last release date of IR and release date of work Space object (IR) are different	202
1.8	Comp Release.Obj Date and Release Date on I/IR/DS New:30.04.2018 S.Gueth	ERR_203_RelDateIrIsMissing appears when last release date of IR (work space object) exists and release Date of status object IR Is empty	203
1.9	Comp Release.Obj Date and Release Date on I/IR/DS New:30.04.2018 S.Gueth	ERR_204_RelDateWSOIsMissing appears when last release date of IR (work space object) is empty and release date of status object IR exists	204

TC Data Quality Check Details

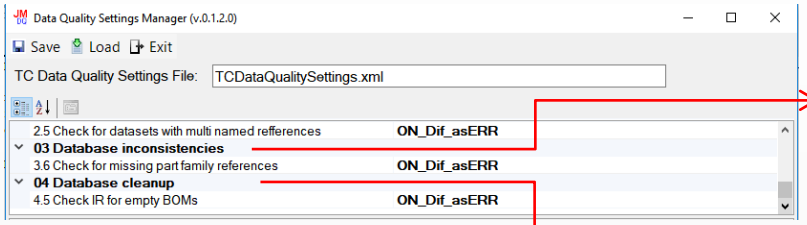
Categorization of the issues (2of3)



Pos	Description:	Note	ResultCode
2	**Dataset inconsistencies**		
2.1	Too many dataset versions	PURGE datasets along refile	210
2.2	Missing Dataset Reference	ERR_301_DSIsMissingFile Integrate with results	220
2.3	Dataset Versions referenced #New: 08.12.2017	**Dataset Versions** are referenced by Folders or others	230
2.4	Inconsistent Cardinality	WRN_140_DSHasMultiIrRefs Integrate with results	240
2.5	Inconsistent Dataset References	ERR_302_DSHasMutiCADFiles Integrate with results	250

TC Data Quality Check Details

Categorization of the issues (3of3)



Pos	Description:	Note	ResultCode
3	**Database inconsistencies (relations, missing objects, …)**		
3.6	Missing Part Family Member References	Data about PFM/PFT will be collected during refile for further analysis	**361 .. 366**
	WRN_361_PFMemberFolderRef	appear if Partfamily Member Item is not below 'PFMaster-Item-folder'	**361**
	WRN_362_PFMasterFolderRef	appear if Partfamily Master has no Partfamily 'PFMaster-Item-folder'	**362**
	WRN_363_PFMasterNoPFMember	appear if Partfamily Master is missing Partfamily Members	**363**
	WRN_364_PFMasterMemberFolderRef	appear if Partfamily Master and Members is missing 'PFMaster-Item-folder'	**364**
	WRN_365_PFMasterMissing	appear if Partfamily Members is missing Partfamily Master	**365**
	WRN_366_PFMasterMemberHasWRN	appear if Partfamily Members of PartFamiliy Master has warings	**366**
4	**Database CleanUp**		
4.2.	POM Stub Objects	Identify BOM's / IR's containing POM Stub Objects	
4.5.	Empty BOMs	list can be delivered right away	450
4.7	AppUID	List Missing APPUIDS via SQL and re-create in front of refile	
4.11	Purge Datasets/ Revisions	see 2.1 will be done during refile	
5	**Multisite Cleanup**		
5.2	Owning Site correction	obsolete	
5.3	Missing Revision	obsolete	
5.4	Multiple Revisions with same ID	obsolete	

TC Data Quality Check Details

Base Settings of all Checks:

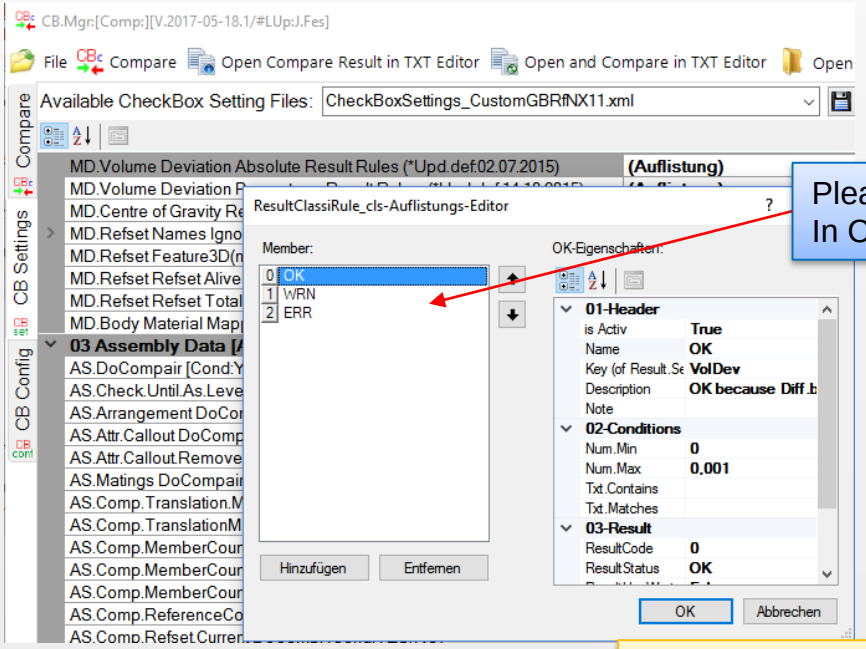
Each Check have the base setting:

- **CheckOff** — **Check is disabled**
- **CheckOn_IF_CheckCond_Hits_Then_ReportAsERR** — **If Condition hits then Report it as Error**
- **CheckOn_IF_CheckCond_Hits_Then_ReportAsWRN** — **If Condition hits then Report it as WRN**

- Results is **to** set only to the Objects that have the ISSUE

- If rule is only valid on specific types (Item/Ir/Ds) then we need to include also TC.type in Check Rule definitions

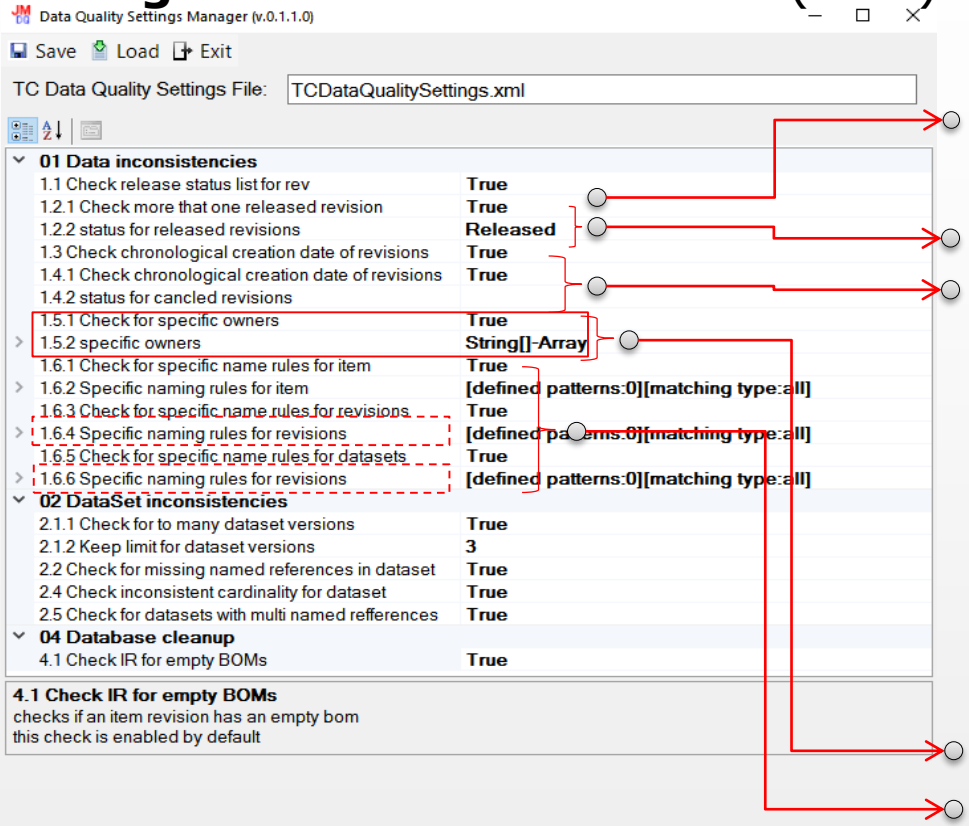
12.06.2017 S.Gueth Software enhanced



#New: 05.06.2017 / J.Fes
#LUp: 12.06.2017 / S.Gueth

TC Data Quality Check Details

Categorization of the issues (1of2)



Pos	Description:	Note	ResultCode
1	**Data inconsistencies**		
1.1	Chk. Release Status: Incorrect Status List (inside one revision)	direct TC.DB access compare status of IR, datasets, BOMview etc. Defining filter what objects have to be compared	110
1.2	More than 1 Revision with status "Released" for 1 Item	JobMgr.DB	120
1.3	Wrong Release Date on Revision and Status	direct TC.DB access Defining filter what objects have to compared Rules. .: Check ‚Date Order' by IR.ID ‚Alpha Order' Objects.: Inc. Filter by Type of objects Example.: A1 Date.Cr < A2 Date.Cr A1 Date.Rel < A2 Date.Rel A2 Date.Cr < A3 Date.Cr A2 Date.Rel < A3 Date.Rel **13.06.2017 S.Gueth: Rcodes Updated / Sort Issue solved**	Release Date 131 Creation date 132
1.4	Inconsistent Owning Site under an Item	Already existing based on JobMgr.DB/MCC Leave it as it is **02.06.2017 Chris: Talks with Mr. Gruber** **07.06.2017 Chris: will take with Mrs. Handsel then decide if check is needed**	
1.5	Owning Users: Complete the admin user cleanup	Mark everything which is owned by specified users 02.06.2017 Result Need to set to 150	150
1.6	CADItemRevisions renamed by migration team	Check for Item/ItemRevision/Dataset naming convention	I:161 IR:162 DS.:163

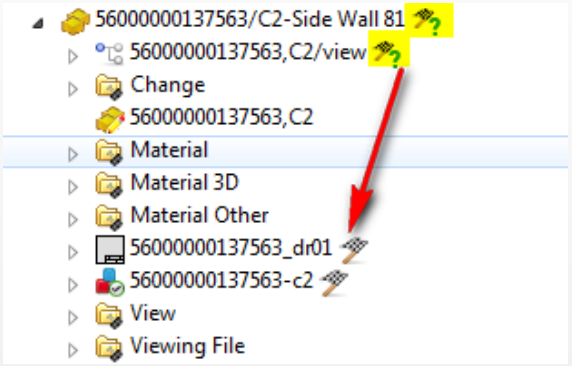
#New: 29.05.2017 / J.Fes
#LUp: 05.06.2017 / J.Fes+Krzy.Du

Check 1.1 Release Status: Incorrect Status List (inside one revision)

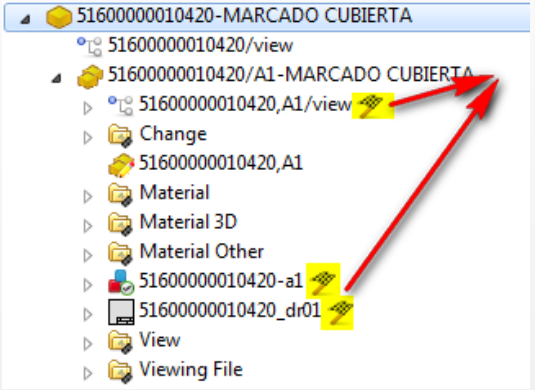
Data inconsistencies (1of3)

✓ Incorrect status within Item Revision

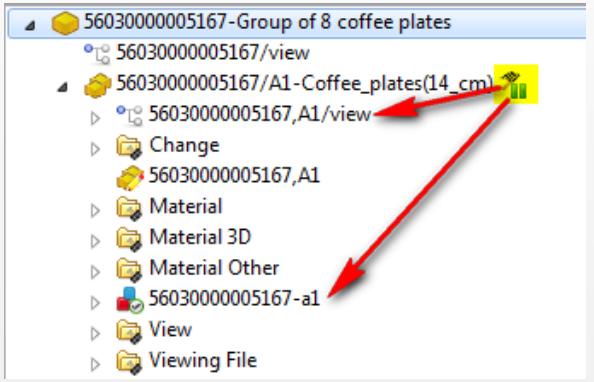
Mixed statuses



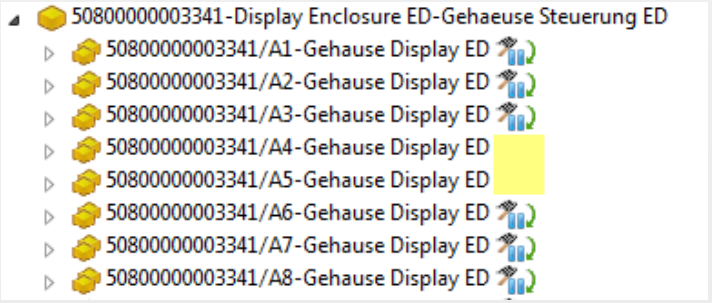
Missing status on IR



Missing status on BVR and dataset



✓ Missing status on Item Revision(s)



Notes:
- witch data are used for this Check are direct form TC.DB or from JobMgr Data?
- This Check need to check status for defined object types

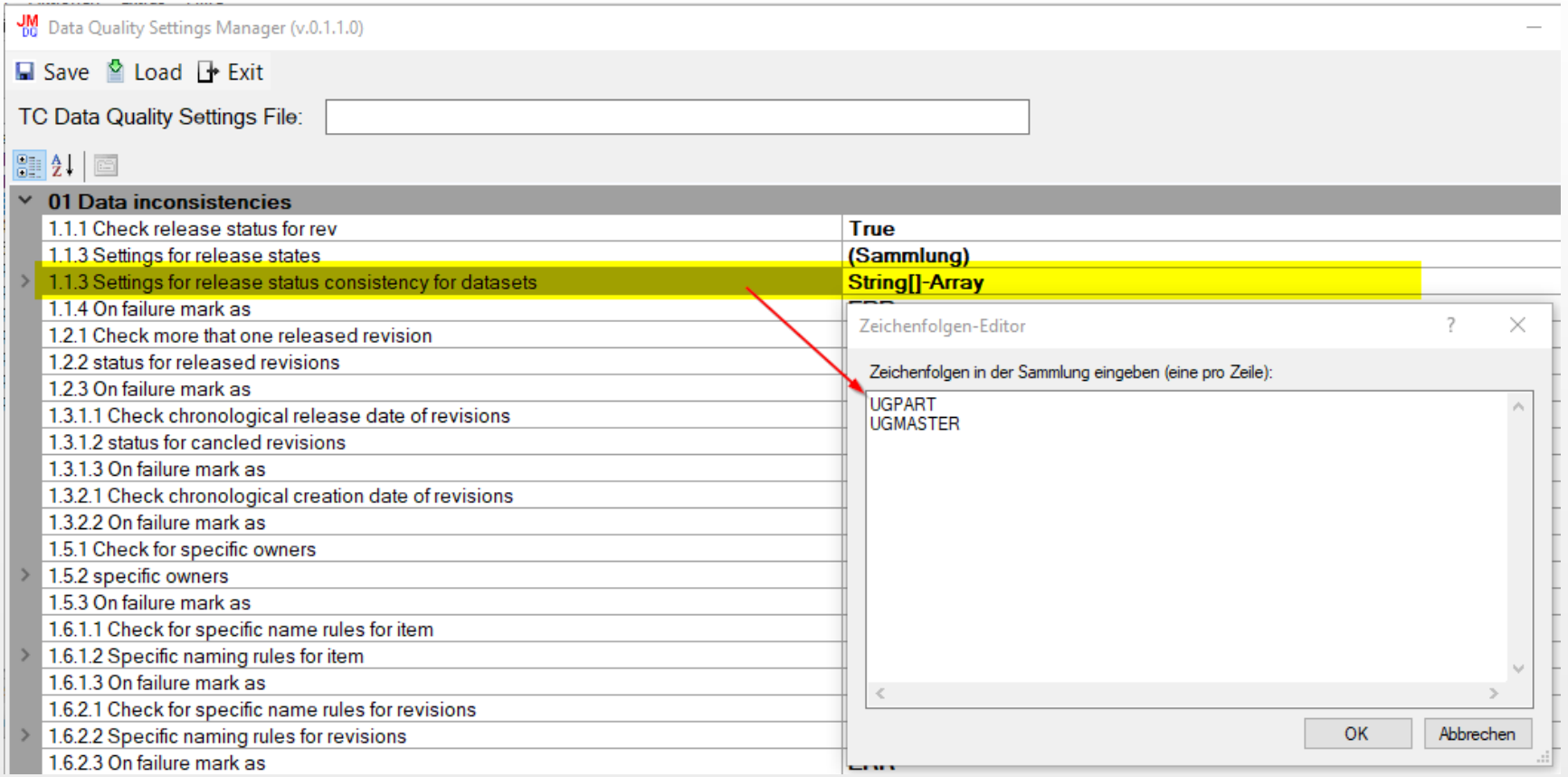
Check 1.1 Release Status: Incorrect Status List (inside one revision)

Object	Type	Relation	Owner	Group ID	Last Modifie...	Checked-Out	Status
5840C000034199/B1-slottec	Catalog Revision	Revisions	BSH Catalog	catalog.bsh_c	19-Apr-2011 09:0		[Released, Archived]
5840C000034199,B1	Catalog Master	Item Masters	BSH Catalog	catalog.bsh_c	09-Jan-2006 10:4		
5840c000034199-b1	DirectModel	Rendering	BSH Catalog	catalog.bsh_c	18-Nov-2007 08:		
5840c000034199-b1	UGMASTER	Specifications	BSH Catalog	catalog.bsh_c	19-Apr-2011 09:0		[Released, Archived]

Check 1.1 Release Status: Incorrect Status List (inside one revision)

you can define a list of dataset types for check 1.1 where the release status will be compared to the release state of the item revision (the * means any dataset type):

Result code on failure is: 111




```
#New: 27.06.2017 / S.Gueth
#Lup:
```

Check 1.1 Release Status: Incorrect Status List (inside one revision)

Data inconsistencies (1of3)

Notes:

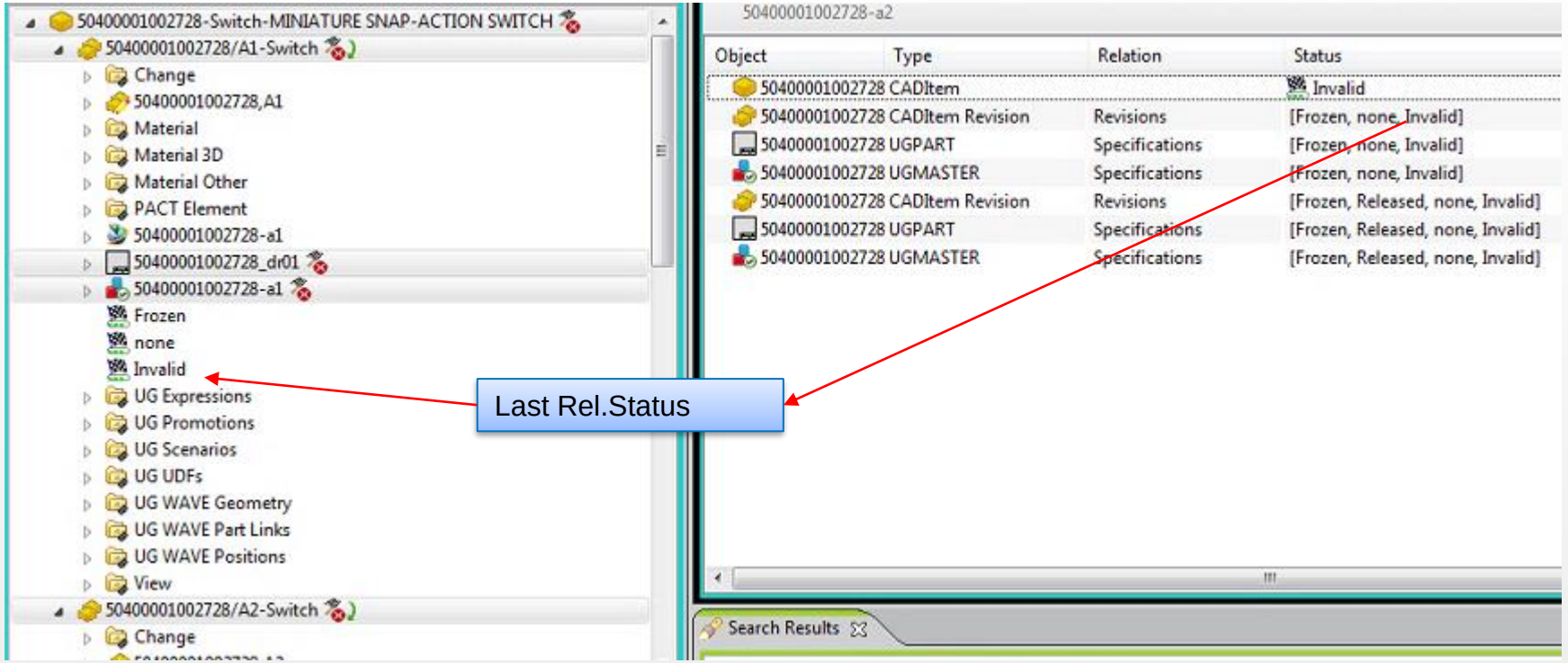
Example:

Item	IR	DATA in IR	Last.RelSt	2ntLast.RelSt
4711				
	4711/a →		Frozen	
		Dataset1		
		Dataset1		
		BOM		
	4711/b →		Tool Order	Quotation
		Dataset1		
		Dataset1		
		BOM		
	4711/c →		Released	Tool Order
		Dataset1		
		Dataset1		
		BOM		

Last.Rel. Status	Allowed Status defs. for 2ntLast.Rel.Status
Released	any status except of status: 'Invalid,Archived'
Tool Order	status 'Frozen', 'Quotation' and 'Cancelled' possible
Quotation	status Frozen and Cancelled possible
Frozen	status Frozen and Cancelled possible
Cancelled	status Frozen, Tool Order, Quotation possible
Invalid	Rel.Status.Last 'Invalid' has to be set on Item all IR's and on Obj below IR's
Archived	Status 'Released'

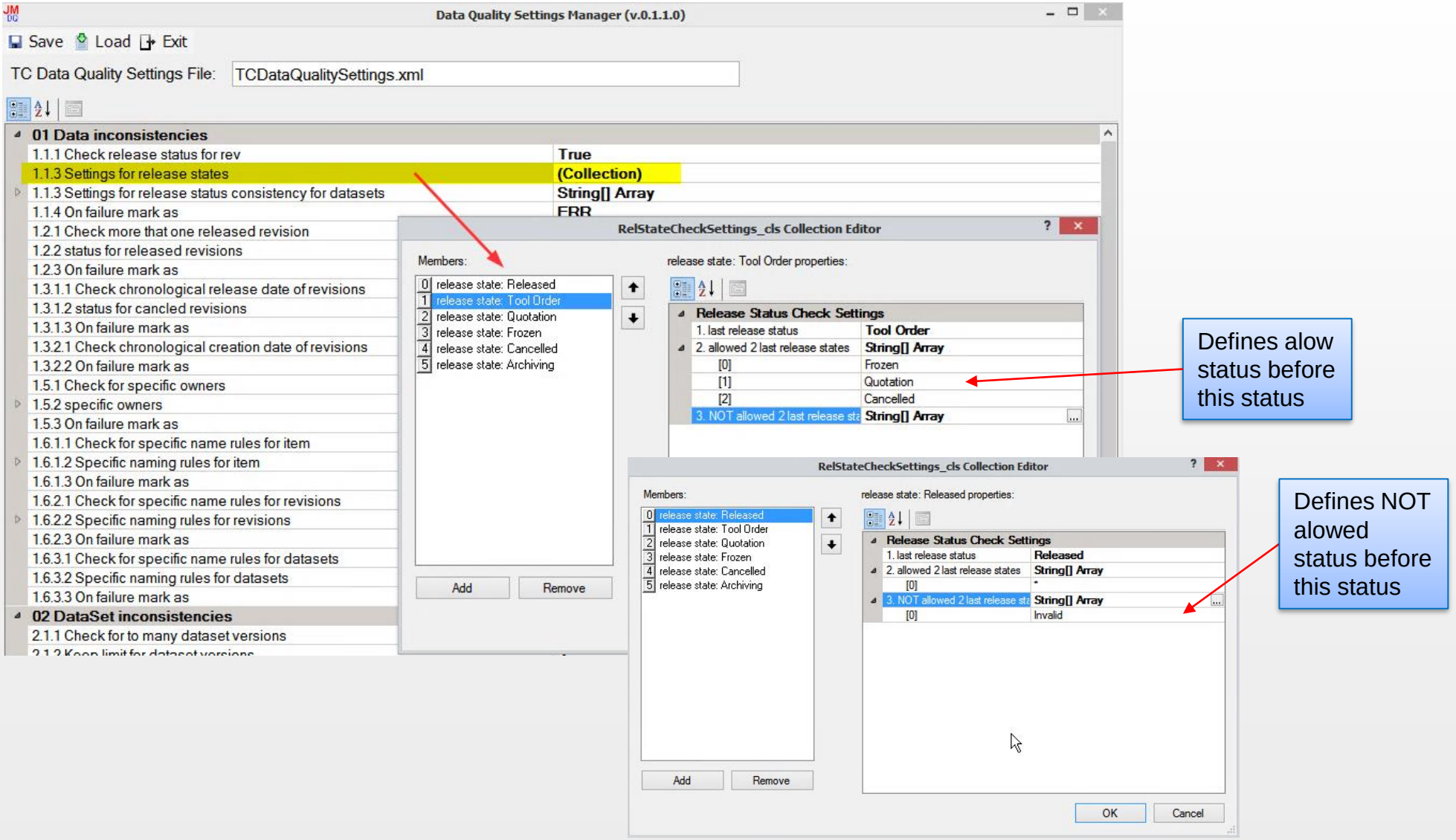
Check 1.1 Release Status: Incorrect Status List (inside one revision)

Example Rel.Status 'Invalid'



Rule
All Objects must have the Last.Rel.Status 'Invalid'

22.09.2017 Setup Check 1.1.3 Settings for release states



Check 1.1 Release Status: Incorrect Status List (inside one revision)

Einbinden von Obj_ReleaseStateListAll.sql

MigIdeas2NX_35_APBomCompair_cls.vb | MigIdeas2NX_01_2_...AExample_docu.txt | TCDataQuality_2016...yChecksVer1_cls.vb | TCDataQuality_2016...tyCheckVer1_cls.vb

JobManager.CmdTools | SharedQualityChecksVer1_cls | Check110RelStateListOfRev

```
18          ''' <summary>
19          ''' function that checks if there are different rel status under one revision
20          ''' <para/>#Doc: ?? Check 1.1 Release Status: Incorrect Status List (inside one revision)
21          ''' </summary>
22          ''' <remarks>
23          ''' #New: 3.1266;26.09.2016;S.Gueth
24          ''' </remarks>
            1 Verweis
25          Public Shared Function Check110RelStateListOfRev(ByRef DQItem_obj As DataQualityItem_cls) As ToolsGl
26
27              ' set result group, result key and description of check
28              Dim resGroup As String = SectionGroupEnumV1.C1_RelStat.ToString
29              Dim resSecKey As String = SectionKeysEnumV1.StatLi.ToString
30              Dim checkDescription As String = "release states between itemRev and dataset are different"
```

```
#New: 25.05.2017 / J.Fes
#Lup:
```

Check 1.3 Wrong Release Date on Revision and Status

Details from BSH Documentation BSH_TeamcenterTopicsforCleanup_TCDATAQualityCheck.docx

1.3. Wrong Release Date on Revision and Status

Sequence of ItemRevisions and their assigned datasets not correct – "Date Released" and "Date Created" have to be in chronological order, except of ItemRevision with Status **"Cancelled"!** Status "Cancelled" can be set on any ItemRev at any time.
Note: **Modification dates** should not be considered as the ItemRevisions could be modified by admin-users after release. (e.g. setting "last status" flag).

A1 dates < A2 dates < A3 dates … <B1 dates … < Z99 dates

- Check of Archived Statuses
  - The "Date Released" of the statuses "Archived" has to be older than the "Date Released" of the last status "Released"
  - Date Released of status "Archived" ReleaseStatusImpl < Date Released of Status "Released" ReleaseStatusImpl

Analysis: can be done via JobManager – consistency check (already available)

Effect: If the release status data is not correct, the opening of an assembly or an Item could be show the wrong result. Depending on the load options, the revision with the highest date will be loaded. → **Critical OP – no discussion → high critical (damage in case of tool order with wrong content)**

```
#New: 29.05.2017 / J.Fes
#Lup:
```

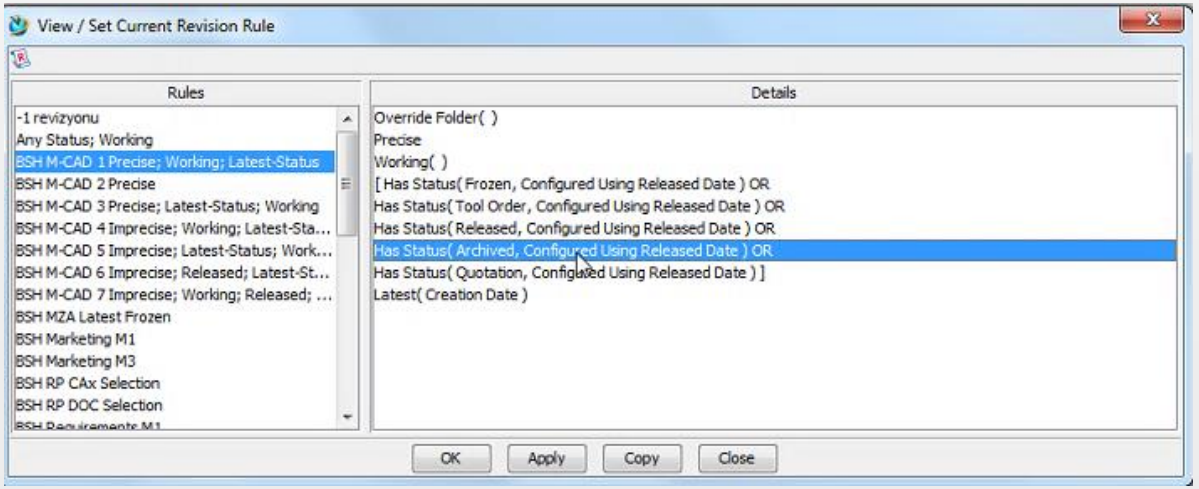
Check 1.3 Wrong Release Date on Revision and Status

Important:

It is needed to check the “Creation date” and “Release Date”

1.3	Wrong Release Date on Revision and Status	direct TC.DB access Defining filter what objects have to compared Rules. .: Check ‚Date Order‘ by IR.ID ‚Alpha Order‘ Objects.: Inc. Filter by Type of objects Example.: A1 Date.Cr < A2 Date.Cr A1 Date.Rel < A2 Date.Rel A2 Date.Cr < A3 Date.Cr A2 Date.Rel < A3 Date.Rel	130

Note:
Object Types should be configurable
It Shold be configurable if Creation Date and Replease




```
#New: 29.05.2017 / J.Fes
#Lup:
```

Check 1.3 Wrong Release Date on Revision and Status

Issue Sort Order

Before: Item Revision where sorted by alphabetic rules:

```
55000000013295/A1
55000000013295/A10
55000000013295/A11
55000000013295/A2
55000000013295/A3
55000000013295/A4
55000000013295/A5
55000000013295/A6
55000000013295/A7
55000000013295/A8
55000000013295/A9
```

Now: Item Revision are sorted in a natural way

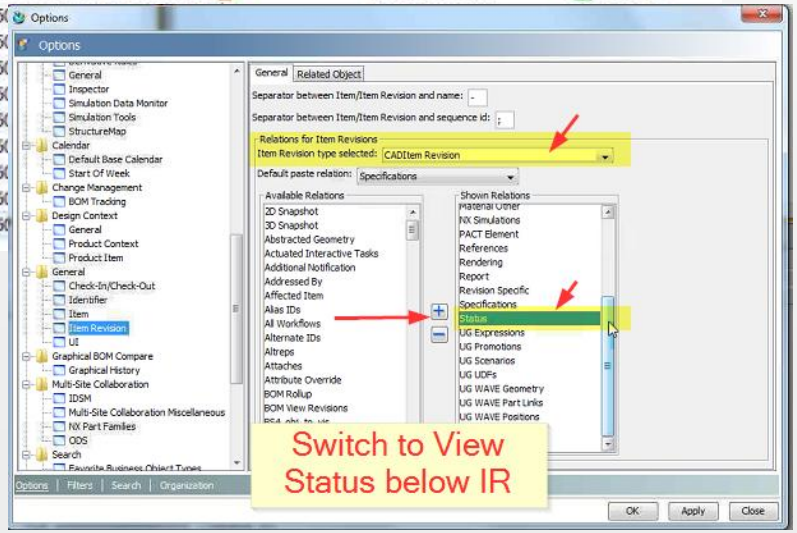
```
55000000013295/A1
55000000013295/A2
55000000013295/A3
55000000013295/A4
55000000013295/A5
55000000013295/A6
55000000013295/A7
55000000013295/A8
55000000013295/A9
55000000013295/A10
55000000013295/A11
```

```
#New: 14.06.2017 / S.Gueth
#LUp:
```

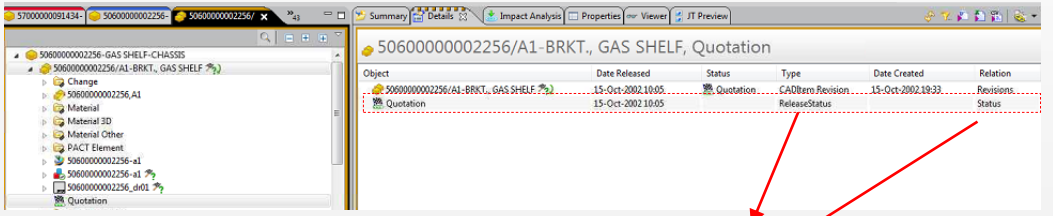
12.01.2018 -> Telco with Krzysztof

ER: Move error to an Item level
What about check of Date Released of an last status attached to ItemRevisions?
Is really status 'Archiving' excluded ? See 50600000002256

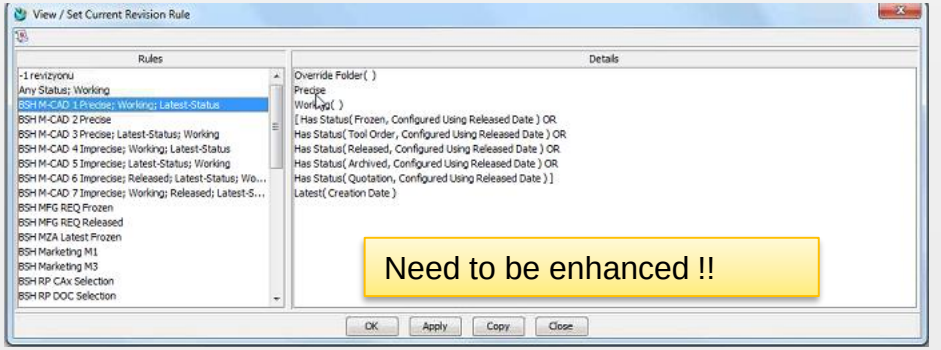
Object	Date Released	Status
50600000002256/A1-BRKT., GAS SHELF	15-Oct-2002 10:05	Quotation
50600000002256/A2-BRKT., GAS SHELF	30-Oct-2002 18:56	Frozen
50600000002256/A3-BRKT., GAS SHELF	30-Oct-2002 09:05	Quotation
50600000002256/A4-GAS SHELF	23-Jan-2003 00:06	Archived
50600000002256/B1-GAS SHELF	14-Feb-2003 20:43	Archived
50600000002256/C1-GAS SHELF	19-Feb-2003 20:05	Archived
50600000002256/D1-GAS SHELF	26-Mar-2003 19:20	Archived
50600000002256/E1-GAS SHELF	26-Mar-2003 19:41	Frozen
50600000002256/E2-GAS SHELF	26-Mar-2003 20:09	Frozen
50600000002256/E3-GAS SHELF	31-Mar-2003 14:43	Archived
50600000002256/F1-GAS SHELF	09-Jun-2003 17:04	Archived



TC - Revision Rules is takin date of last status



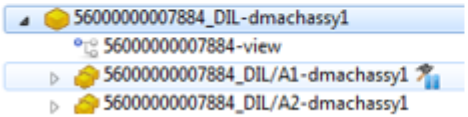
Object of type
ReleaseStatus



Check 1.6 CADItemRevisions renamed by migration team

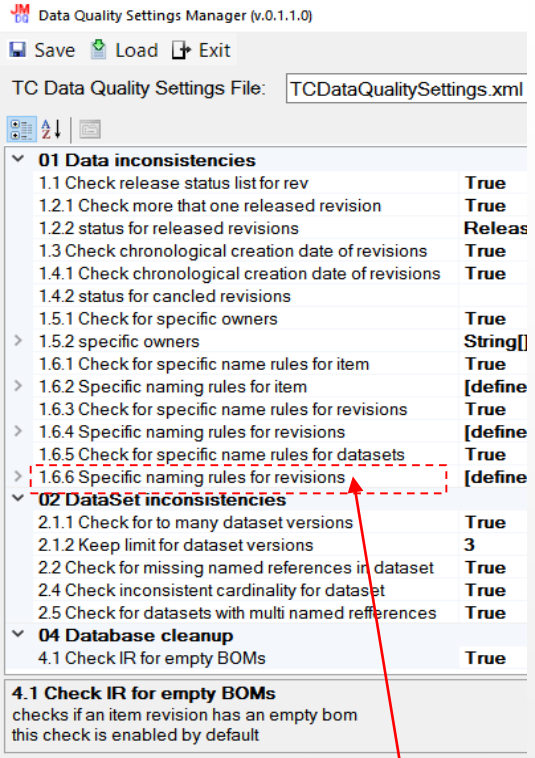
1.6. CADItemRevisions renamed by migration team

Reason: Item with different owning sites in the different CAX-systems. The Business colleagues have to decide which site is the correct owning site.



Analysis: can be done via JobManager – consistency check (already available) – this list can be provided right away

Effect: During the NextGen migration, duplicated item ids are renamed to unique ids to allow the import in the central system. The decision was done with the business coordinator. Now in some cases the user wants to have both versions of the Item. In this case one of them must be renamed to a complete new number. But this does not really affect the consistency → **Low**
OP. →**Low**



Replace for revisions with for datasets

Name scema / Name Convention Rules

Type	Name	
ItemId	must match name base rules	
RevId	must match name base rules	
DS	#ItemId#-#RevId#	// master
DS	#ItemId#_dr01	// spec. 1
DS	#ItemId#_dr02	// spec. 2
DS	#ItemId#_ar01	// altrep 1
DS	#ItemId#_ar02	// altrep 2

Example:
4711
A
4711-A Master
4711_dr01
4711_dr02
B
9999-B Master
4711_dr01
4711_dr02
4711__dil_dr03

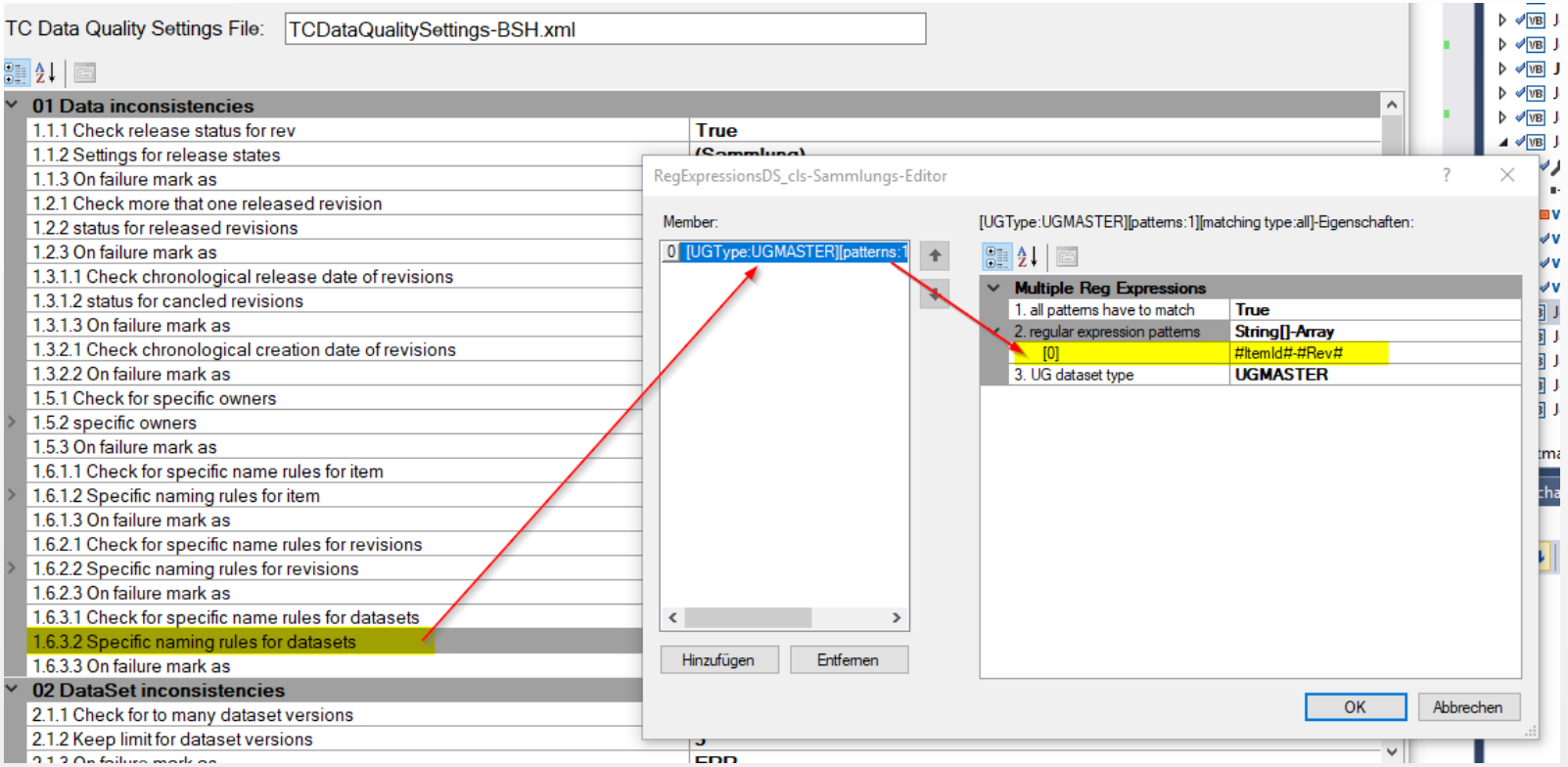
```
#New: 05.06.2017 / J.Fes
#Lup: 19.06.2017 / S.Gueth
```

Check 1.6 CADItemRevisions renamed by migration team

New settings for naming rules for datasets. You can define naming rules for specific dataset types.
And you can also use gitter variables in the naming rules for item itemRevs and datasets.

Valid gitter variables are:

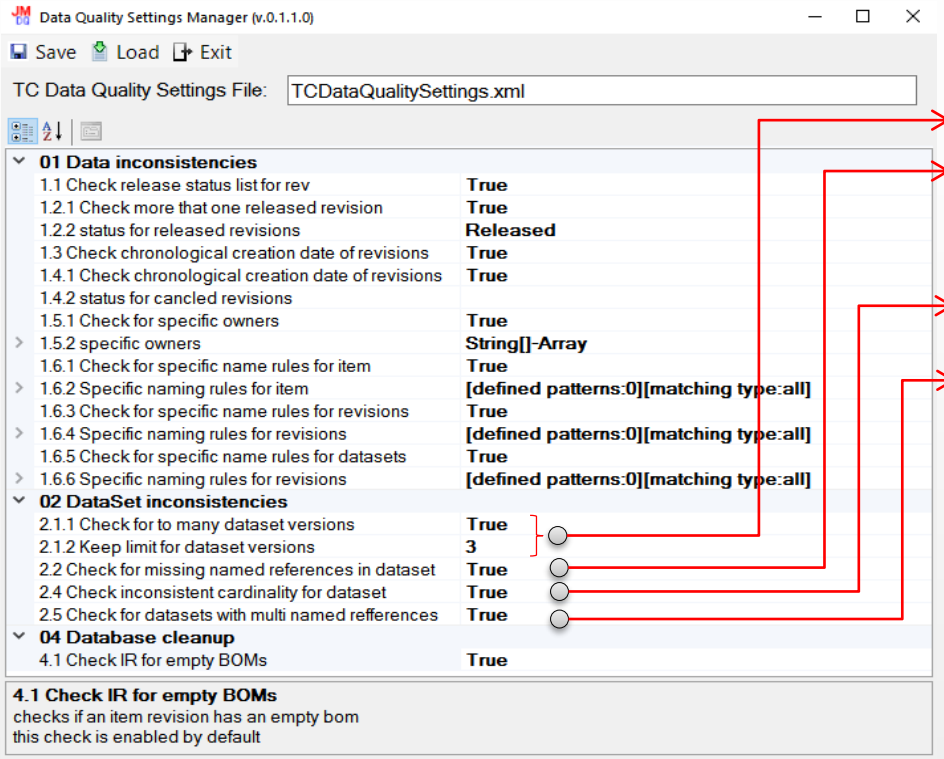
#ItemId#
#Rev#
#IrId#
#Ir_Puid#
#ObjectId#
#ObjectName#
#ObjectType#
#ObjectOwningSiteId#
#ObjectFromSiteId#
#ObjectCliName#
#ObjectFs_Vol#
#ObjectFs_NE#
#ObjectFs_DPNE#
#ObjectGroup#
#ObjectOwner#
#ObjectPuid#
#IrNameCLI#
#ItemIdCLI#
#ObjectCreateDate#
#ObjectFs_DPNE#
#ObjectLastModDate#
#ObjectLastModUser#
#ObjectUgMaster_Type#
#ProcStateCol01#
#ProcStateCol02#
#ProcStateCol03#
#ProcStateCol04#
#ProcStateCol05#
#ProcStateCol06#
#ProcStateCol07#
#ProcStateCol08#
#ProcStateCol09#
#ProcStateCol10#
#ProcStateCol11#
#ProcStateCol12#
#ProcStateCol13#
#ProcStateCol14#
#ProcStateCol15#
#ProcStateCol16#
#ProcStateCol17#
#ProcStateCol18#
#ProcStateCol19#
#ProcStateCol20#
#ProcStateColRf#




```
#New: 05.06.2017 / J.Fes
#Lup: 19.06.2017 / S.Gueth
```

TC Data Quality Check Details

Categorization of the issues (1of2)

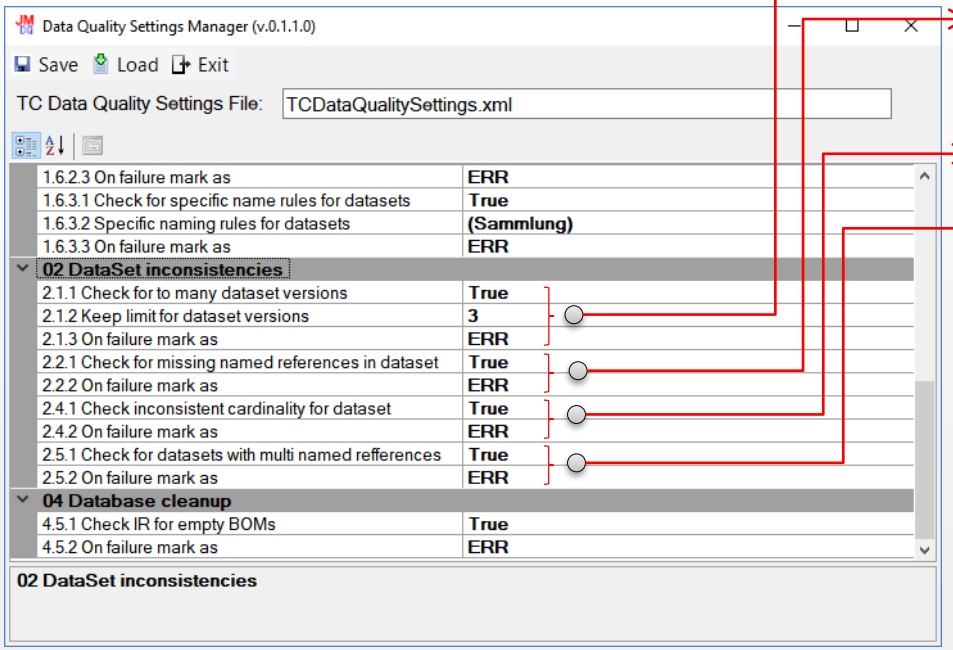


Pos	Description:	Note	ResultCode
2	**Dataset inconsistencies**		
2.1	Too many dataset versions	PURGE datasets along refile 05.06.2017 : Enhance : ISSUE 05.10.2017	211 212
2.2	Missing Dataset Reference	ERR_301_DSIsMissingFile Integrate with results 05.06.2017 : OK? 05.10.2017: YES OK	220
2.3	Dataset Revisions are referenced by Folders or others	05.06.2017 : see slide	
2.4	Inconsistent Cardinality	WRN_140_DSHasMultiIrRefs Integrate with results 05.06.2017 : OK	240
2.5	Inconsistent Dataset References	ERR_302_DSHasMutiCADFiles Integrate with results 05.06.2017 : OK	250

#New: 05.06.2017 / J.Fes
#Lup:

TC Data Quality Check Details

Categorization of the issues (1of2)



Pos	Description:	Note	ResultCode
2	Dataset inconsistencies		
2.1	Too many dataset versions	PURGE datasets along refile 05.06.2017 : Enhance :	211 212
2.2	Missing Dataset Reference	ERR_301_DSIsMissingFile Integrate with results 05.06.2017 : OK? 05.10.2017: YES OK	220
2.3	Dataset Revisions are referenced by Folders or others	05.10.2017 : see slide	
2.4	Inconsistent Cardinality	WRN_140_DSHasMultiIrRefs Integrate with results 05.06.2017 : OK	240
2.5	Inconsistent Dataset References	ERR_302_DSHasMutiCADFiles Integrate with results 05.10.2017 : OK	250

05.10.2017:

2.1 Is to be checked see Issue tracker
https://tracksys.startp.de/Issues/IssueDetail.aspx?id=2744

2.3 Not jet Implemented
#ToDo: Implement SQL to find References of Datases to Folders or other types.

#New: 05.06.2017 / J.Fes
#Lup: 05.10.2017 / J.Fes

Overview TC - DataCheck

MSC: Identify Data to Sync

MSC: Multi-Site Consistent Check

MSC:Check Rules

MSC: Completeness Analyse

MSC: Integr. in PLMJobManager

DQC: TC data quality check for NX related data

Glossar Keys: **MSC**: Tc - Multisite Check // **DQC**: Tc - Data Quality Check

Check 2.1 Too many dataset versions

2.1. Too many dataset versions

Too many dataset versions, because of wrong version limit.
Export took too much time and sometimes exports or load failed

Analysis: addPLM has a tool for purging internal revisions except of last and second last internal version and if one or two of three internal versions are missing, the tool will create the missing versions => not only analyzing but also **cleanup**

Effect: If there are more than the allowed dataset versions, it will not have a negative effect for the normal work. It waste space on the volume and it creates bigger export files during the transfer_ownership. → **Low**

OP - maybe purge_dataset (going to defined keep limit) should be activated again !! as former in CAX
→ LOW

@Sascha:
please check current implementation

02 DataSet inconsistencies	
2.1.1 Check for to many dataset versions	True
2.1.2 Keep limit for dataset versions	3

O.Ds.Ver	O.Ds.Ver(n)	O.Ds.VerKeepLim
= 5	=	=
5	3	3
5	3	3
5	1	3
5	3	3

Check Rules:

- Check if defined Keep Limit <= Ds.VerKeepLim ERR:211
- Check if O.Ds.Ver(n) <= O.Ds.VerKeepLim ERR:212

```
#New: 05.06.2017 / J.Fes
#Lup:
```

Check 2.2 Missing Dataset Reference

2.2. Missing Dataset Reference

Dataset reference Imanfile does not exist but Named Reference count for dataset is available. The ImanFile from CAx system is missing or partially available in PLM system.

Analysis: can be done via JobManager – consistency check – this list can be provided right away

Effect: In this case the dataset could not be opened. If all dataset versions are missing, the whole work is lost. This must be analyzed and corrected until the old CAD sites are available, because some of this missing references could be found there → **Critical**
OP - Critical --- missing files (volume) or relations (DB) → Critical

@Sascha:
Results is to set only to the Objects that have the ISSUE

@Sascha:
please check current implementation

Issue Example:

Ir.Id	O.Name	Ir.Rank	O.Type	O.LastModDate	O.Last	O.SP/A	O.A	O.A	O.P.10 [TCDataQuality]	P.Res.Code
51001002090553/A1	51001002090553-a1	-2	UGMASTER	2009-01-27 08:34	**infodba**	SP	0	0	D.ERR (End.Error:Chk!)	220
51001002090553/A2	51001002090553-a2	-1	UGMASTER	2009-01-27 08:34		SP	0	0	D.ERR (End.Error:Chk!)	220
51001002090553/A3	51001002090553-a3	0	UGMASTER	2008-09-08 08:00	michaelisa	SP	0	0	D.ERR (End.Error:Chk!)	220

#New: 05.06.2017 / J.Fes
#Lup:

Check 2.3 Dataset Revisions are referenced by Folders or others

2.3. Dataset Revisions are referenced by Folders or others

Discrete dataset revisions are referenced by folders or others. There are seldom cases where not the central dataset (without version number display) is referenced by a folder or something similar but a discrete version. Updating the dataset then leads to errors because the old version can't be removed, e.g. Dataset highest version is 12 and version 5 is still referenced. The cleanup to keep the version limit to 3 will fail.

Analysis: can be done via JobManager –list can be provided

Effect: If a dataset revision is referenced in the system it could not be deleted during the normal purge. This affect then the case 2.1 and all its problems. A dataset version should never be references and therefore this should be also cleaned up → **Medium**
OP - should be done. → **Medium**

@Sascha:
Results is to set only to the Objects that have the ISSUE

Issue Example:

Ir.Id	O.Name	Ir.Rank	O.Type	O.LastModDate	O.Last	O.SP/A	O.A	O.A	O.P.10 [TCDataQuality]	P.Res.Code
51001002090553/A1	51001002090553-a1	-2	UGMASTER	2009-01-27 08:34	infodba	SP	0	0	D.ERR (End.Error:Chk!)	220
51001002090553/A2	51001002090553-a2	-1	UGMASTER	2009-01-27 08:34		SP	0	0	D.ERR (End.Error:Chk!)	220
51001002090553/A3	51001002090553-a3	0	UGMASTER	2008-09-08 08:00	michaelisa	SP	0	0	D.ERR (End.Error:Chk!)	220

#New: 05.06.2017 / J.Fes
#Lup:

Check 2.3 Dataset Revisions are referenced by Folders or others

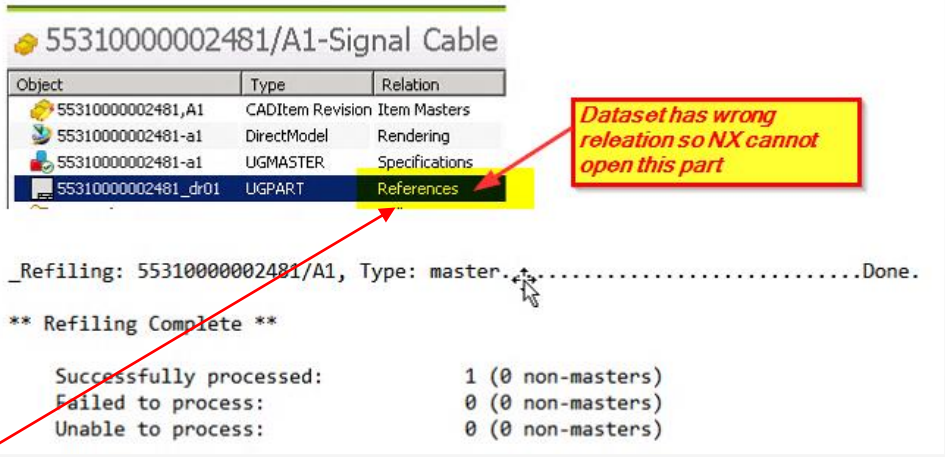
Versions

2.3. Dataset Revisions are referenced by Folders or others

Discrete dataset revisions are referenced by folders or others. There are seldom cases where not the central dataset (without version number display) is referenced by a folder or something similar but a discrete version. Updating the dataset then leads to errors because the old version can't be removed, e.g. Dataset highest version is 12 and version 5 is still referenced. The cleanup to keep the version limit to 3 will fail.

Analysis: can be done via JobManager –list can be provided

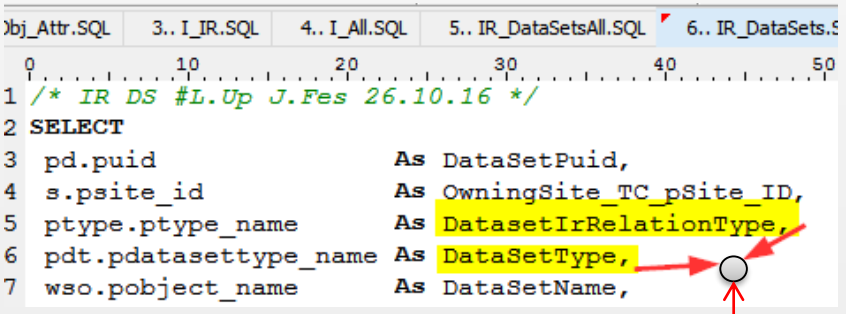
Effect: If a dataset revision is referenced in the system it could not be deleted during the normal purge. This affect then the case 2.1 and all its problems. A dataset version should never be references and therefore this should be also cleaned up → **Medium**
OP - should be done. → **Medium**



Definition:
- Check if Dataset have right 'relation type' between DS and Revision
  In JobMgr we need a mapping with
  DS Type – and DataSet Ir Repleation type
- Check If DS has only 1 Relation to revision
  any other relation is found for datasets versions

2 Results:
- Right relation to IR
- DS.Version has no other relation then 'revision-anchor' relation

For Implementation:
- Need SQL to find any references

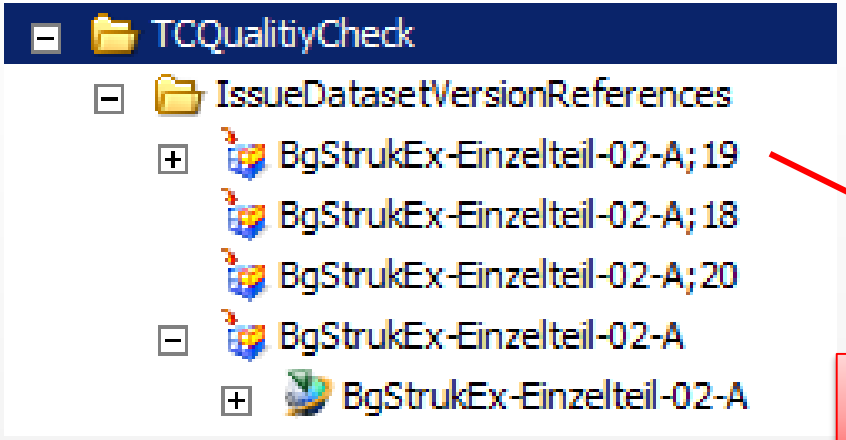



```
#New: 05.06.2017 / J.Fes
#Lup:
```

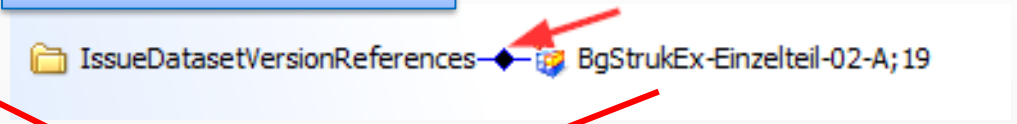
Check 2.3 Dataset Revisions are referenced by Folders or others

Example: Issue

Data structure



Where Referenced

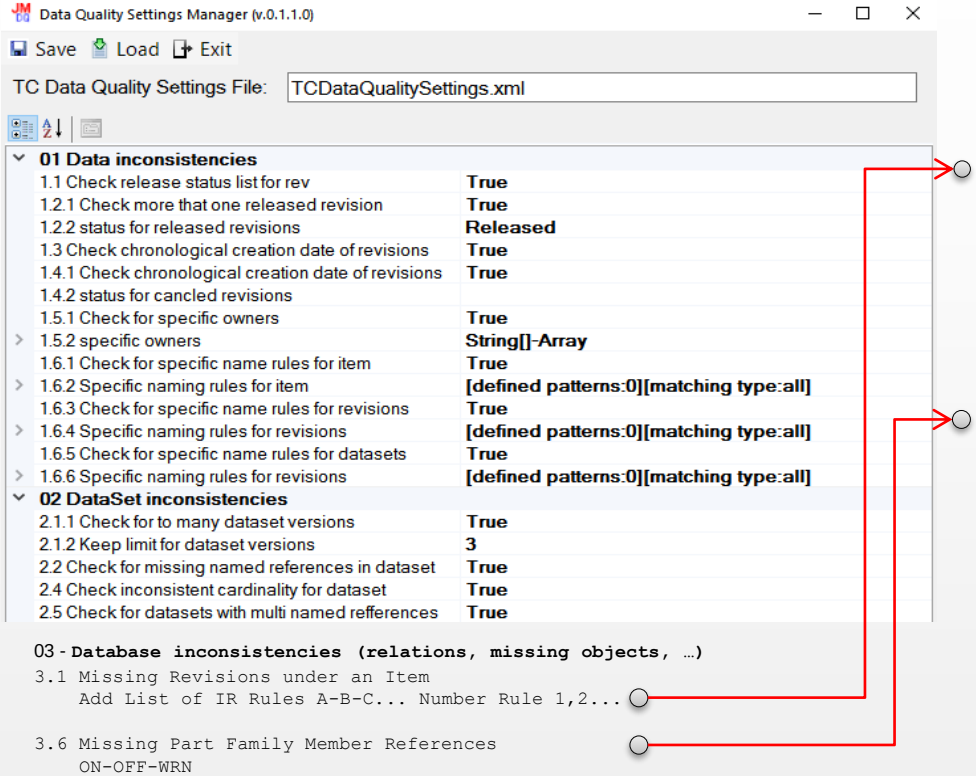


!! Dataset Version !!!

#New: 05.06.2017 / J.Fes
#Lup: 31.05.2018 / J.Fes

TC Data Quality Check Details

Categorization of the issues (2of2)



Pos	Description:	Note	ResultCode
3	**Database inconsistencies (relations, missing objects, …)**		
3.2	Missing Revisions under an Item	See point 1.3 07.06.2017 maybe integrate it into Point 1.3	
3.4	Inconsistent Ids	See point 1.6 07.06.2017 is allready integr. In 1.6	
3.5	Wrong Item Revision Ids	See point 1.6 07.06.2017 is already integr. In 1.6	
3.6	Missing Part Family Member References	Data about Partfamily Master – and Member Issues will be collected during importing/updateing data from TC to JobMgr	**360**
	WRN_361_PFMemberFolderRef	appear if Partfamily Member Item is not below 'PFMaster-Item-folder'	**361**
	WRN_362_PFMasterFolderRef	appear if Partfamily Master has no Partfamily 'PFMaster-Item-folder'	**362**
	WRN_363_PFMasterNoPFMember	appear if Partfamily Master is missing Partfamily Members	**363**
	WRN_364_PFMasterMemberFolderRef	appear if Partfamily Master and Members is missing 'PFMaster-Item-folder'	**364**
	WRN_365_PFMasterMissing	appear if Partfamily Members is missing Partfamily Master	**365**
	WRN_366_PFMasterMemberHasWRN	appear if Partfamily Members of PartFamiliy Master has warings	**366**

#New: 05.06.2017 / J.Fes
#LUp: 31.05.2018 / J.Fes

Check 3.2 Missing Revisions under an Item

3.2. Missing Revisions under an Item

Hadsel: Not critical
The name of an item revision is a combination of former called revision and sequence.
The abbreviation for revision is a single character and for sequence it is a number.
The "Revision" of the ItemRevisions of one Item must be in alphabetical order without any gaps:

A-B-C-D-E-F-G-H-I-J-K-L-M-N-O-P-Q-R-S-T-U-V-W-X-Y-Z-AA-AB-....-AAA

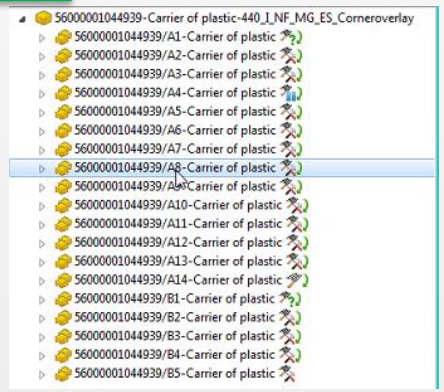
Analysis: can be done via JobManager

Effect: If a revision number is missing under an Item, it has no real effect on the system. Only in the case that a whole revision is missing, but in this case the revision id jumps from A1 to C1 and so the B is missing. There is no real reason to correct this. It is only a display topic. → **Low**
OP -> Low

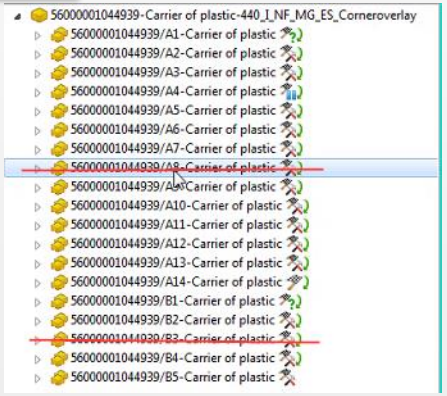
Results is to assign to ITEM as WRN with the list of missing RevId's

Examples:

OK

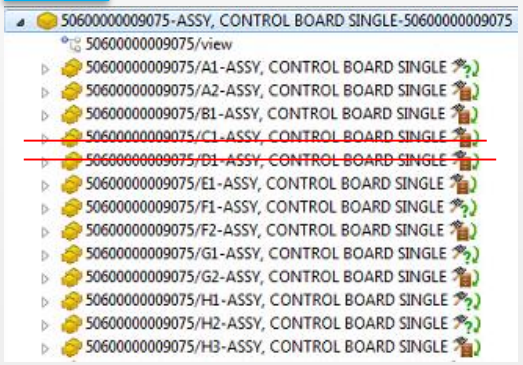


WRN



In case Next Number is missing:
Result.Msg = A8,B3

WRN

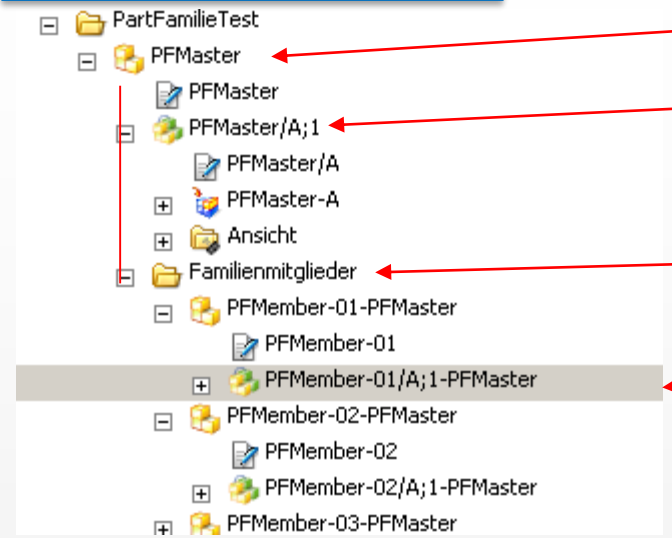


In case IR is missing at all:
Result.Msg = Cx,Dx

```
#New: 07.06.2017 / J.Fes
#Lup:
```

Check 3.6 Missing Part Family Member References

Data Model



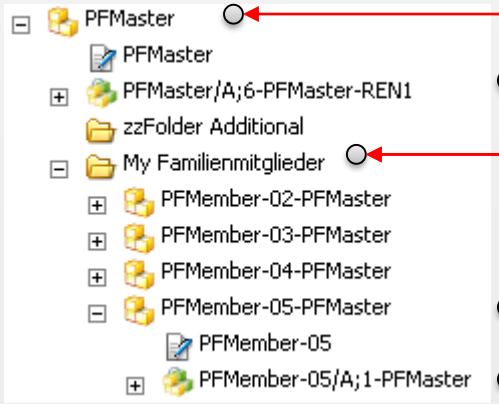
PF-Master ITEM

PF-Master - IR

PF-Member Folder
Name 'Family Members','Familienmitglieder'

PF-Member - IR

Details Relations between PF – Master - Members



PF-Master – ITEM - Folder

PF- Member – ITEM - Folder

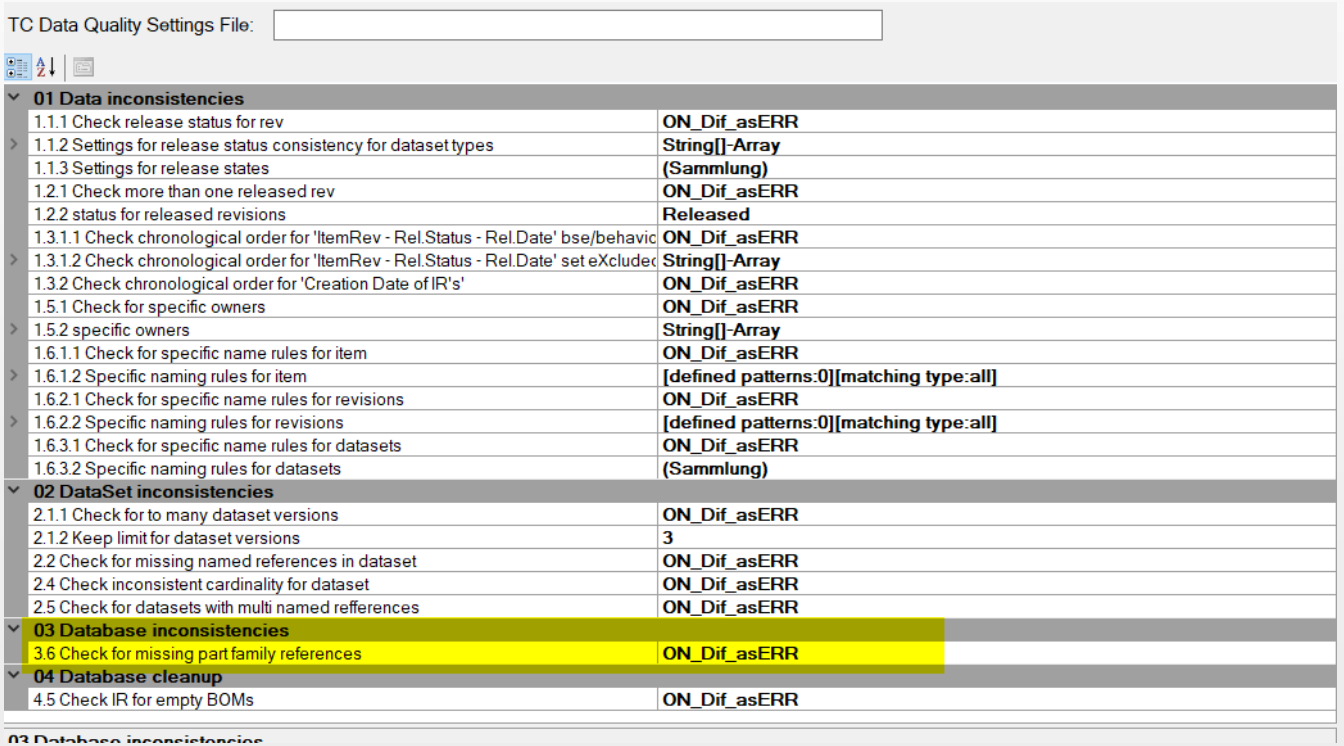
IMAN_UG_part_family_link
PF-Master IrID – PF-Member IrID

```
#New: 14.05.2018 / J.Fes
#Lup:
```

Check 3.6 Missing Part Family Member References

see 3.6 in data quality settings
results for this check are on item revisions

error code 361: part family member (pfm) not refferenced to pfm folder of template
error code 362: part family master has no part famliy members
error code 363: part family master has no part family folder



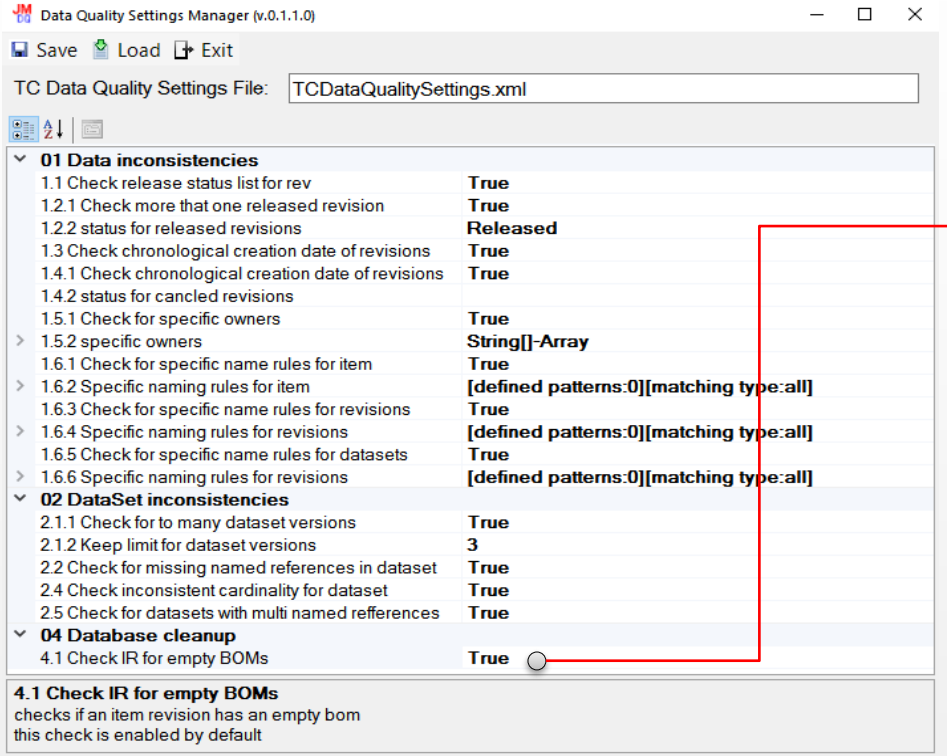
TC Data Quality Settings File:

01 Data inconsistencies	
1.1.1 Check release status for rev	**ON_Dif_asERR**
1.1.2 Settings for release status consistency for dataset types	**String[]-Array**
1.1.3 Settings for release states	**(Sammlung)**
1.2.1 Check more than one released rev	**ON_Dif_asERR**
1.2.2 status for released revisions	**Released**
1.3.1.1 Check chronological order for 'ItemRev - Rel.Status - Rel.Date' bse/behavic	**ON_Dif_asERR**
1.3.1.2 Check chronological order for 'ItemRev - Rel.Status - Rel.Date' set eXcludec	**String[]-Array**
1.3.2 Check chronological order for 'Creation Date of IR's'	**ON_Dif_asERR**
1.5.1 Check for specific owners	**ON_Dif_asERR**
1.5.2 specific owners	**String[]-Array**
1.6.1.1 Check for specific name rules for item	**ON_Dif_asERR**
1.6.1.2 Specific naming rules for item	**[defined patterns:0][matching type:all]**
1.6.2.1 Check for specific name rules for revisions	**ON_Dif_asERR**
1.6.2.2 Specific naming rules for revisions	**[defined patterns:0][matching type:all]**
1.6.3.1 Check for specific name rules for datasets	**ON_Dif_asERR**
1.6.3.2 Specific naming rules for datasets	**(Sammlung)**
02 DataSet inconsistencies	
2.1.1 Check for to many dataset versions	**ON_Dif_asERR**
2.1.2 Keep limit for dataset versions	**3**
2.2 Check for missing named references in dataset	**ON_Dif_asERR**
2.4 Check inconsistent cardinality for dataset	**ON_Dif_asERR**
2.5 Check for datasets with multi named refferences	**ON_Dif_asERR**
03 Database inconsistencies	
3.6 Check for missing part family references	**ON_Dif_asERR**
04 Database cleanup	
4.5 Check IR for empty BOMs	**ON_Dif_asERR**
03 Database inconsistencies	

#New: 03.11.2017 / J.Fes
#Lup: 08.11.2017 / S.Gueth

TC Data Quality Check Details

Categorization of the issues (2of2)



Pos	Description:	Note	ResultCode
4	**Database CleanUp**		
4.2.	POM Stub Objects	Identify BOM's / IR's containing POM Stub Objects 07.06.17 see details on Slide Check 4.2 POM Stub Objects	
4.5.	Empty BOMs	list can be delivered right away 07.06.17 see change R.Code	410 Change to 450
4.7	AppUID	List Missing APPUIDS via SQL and re-create in front of refile 07.06.17 No integration needed because Object are created via refile	
4.11	Purge Datasets/ Revisions	see 2.1 will be done during refile 07.06.17 Action is Done with last Refile	
5	**Multisite Cleanup**		
5.2	Owning Site correction	obsolete	
5.3	Missing Revision	obsolete	
5.4	Multiple Revisions with same ID	obsolete	

Check 4.2 POM Stub Objects

4.2. POM Stub Objects

Removal of not used POM Stub objects. This comes from the migration
Some objects point to stub which were never imported to the system. The stubs and the relations must be deleted, or the objects created instead of stub

Chris : 16.03.2016 : Example of STUB in BOMViewRevision due to missing ItemRevision

56500000065315/F10-Assembly gear brewing-unit V3 (View) - BSH M-CAD 1 Precise; Working; Latest-Status - Date - "Now"

BOM Line	Find No.	Rule configured by	Item Rev Status	Item Description
56500000065315/F10-Assembly gear brewing-unit V3 (View)			Tool Order	
50900001005113/C3-Gear-case middle II	150	Precise	Tool Order	Getriebegehaeuse mittetei.
56500000067759/E4-Gear case top	160	Precise	Released	KVA
56500000067757/F5-Gear case bottom	270	Precise	Released	Getriebegehaeuse unterteil
50900000001822/E1-Worm-wheel	280	Precise	Tool Order, Released	Wormwheel
50900000001829/A1-Steel ball dia4mm	290	Precise	Tool Order, Released	50900000001829
50900000001829/A1-Steel ball dia4mm	300	Precise	Tool Order, Released	50900000001829
50900000001827/C1-Sleeve	310	Precise	Released	50900000001827
50900000001821/C1-Assembly Motor Brewing-Unit (View)	320	Precise	Released	
<<REMOTE OBJECT>>	330	No configured Revision		
56500000041560/C1-Assembly switches BU state TE7 ZF (View)	340	Precise	Quotation, Tool Orde...	
<<REMOTE OBJECT>>	360	No configured Revision		
56500001163794/A3-Asm Switches BU State 60 (View)	370	Precise	Tool Order	56500001163794
<<REMOTE OBJECT>>	380	No configured Revision		
<<REMOTE OBJECT>>	390	No configured Revision		

Such an assembly cannot be opened

Example:
POM Stub's

Result.Msg In this case
BOMStubs:ERR 4n

ToDo:
- Review Methodes
- mybe analyse during JS.Import

Results:
add to IR the numbers (n) of BOM Stubs in BOM

PSPad - [V:\JobManager\ProgEntw\Ver03\JobManagerV3\01-BinServer\Resources\TcSQL\BOMc_ImPrecise_TCUA.SQL]

File Projects Edit Search View Format Tools HTML Settings Window Help(x)

1.. BOMc_ImPrecise_TCUA.SQL

```
1 /* TCUA BOMc ImPrecice: BOMLi Rev.Rule:latest.or L.Up 20.01.15 */
2 SELECT ItemID ,
3        IrID ,
4        IrPuid ,
5        count(*) AS BOML_
6 from
7 (
8 SELECT
9  iBOML.pitem_id           AS ItemID,
10 irBOML.pitem_revision_id AS IrID,
11 irBOML.puid              AS IrPuid,
12 rank() over (partition BY iBOML.puid ORDER BY paoIrBOML.pcreation_date DESC) AS rnk
13 FROM
14             infodba.PITEM                  iBOM
15  INNER JOIN infodba.PITEMREVISION          irBOM    ON (iBOM.puid = irBOM.ritems_tagu)
16  INNER JOIN infodba.PSTRUCTURE_REVISIONS   ps       ON (irBOM.puid = ps.puid)
17
18  INNER JOIN infodba.PPSBOMVIEWREVISION     bvr      ON (ps.pvalu_0 = bvr.puid)
19  INNER JOIN infodba.PPSOCCURRENCE          bo       ON (bvr.puid = bo.rparent_bvru)
20  INNER JOIN infodba.PITEM                  iBOML    ON (bo.rchild_itemu = iBOML.puid)
21  INNER JOIN infodba.PITEMREVISION          irBOML   ON (iBOML.puid = irBOML.ritems_tagu)
22
23  LEFT JOIN infodba.PPSBOMVIEW              bv       ON (bvr.rbom_viewu = bv.puid)
24  LEFT JOIN infodba.PPSVIEWTYPE             bvt      ON (bvt.puid = bv.rview_typeu)
25
26  LEFT JOIN infodba.PWORKSPACEOBJECT        irBOMlpwo  ON (irBOML.puid = irBOMlpwo.puid)
27  LEFT JOIN infodba.PPOM_APPLICATION_OBJECT paoIrBOML  ON (irBOML.puid = paoIrBOML.puid)
28
29 WHERE
30  irBOM.puid = :para_ir_puid
31  AND irBOMlpwo.pactive_seq = 1
32  AND upper(bvt.pname) in ('VIEW', 'CATIA_MULTI_MODEL', 'CATIA')
33 ) t
34  where rnk = 1
35 GROUP BY ItemID, IrID, IrPuid
```

Values are null in case of BOM Stubs

```
#New: 07.06.2017 / J.Fes
#Lup:
```