SAP BI Data Reconciliation Roadmap

Bikash Mohanty
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Author: Bikash Mohanty

XYZ BI DATA USAGE SCENARIO / BACKGROUND

SAP has grown to be the most important information system at XYZ LTD over the years. XYZ LTD uses SAP BI as the central tool for operational and analytical reporting. Decisions of local and global importance are taken based on the results of reporting in SAP BI. As the information stored within SAP BI is used as the basis of company-wide decisions and strategies, data quality plays a crucial role.

One of the most important aspects of data quality is data consistency. Because SAP BI as a data warehouse integrates, stores and transforms (prepares) data, the consistency of data between the different processing steps is a key factor. This ROADMAP describes the possible data reconciliation ISSUES and the relevant implementation steps that you can apply in your system to check whether data is consistent in the SAP source system and SAP BI. In addition, these Solutions also support you in determining the causes of data inconsistency.

BI Systems

- Global BI system (B0*)
- Western Europe (B4*)
- EMEA (B7*, B0* & B4*)
- AMERICAS (B5*)
- ASPAC (B6*)

Source data / Application areas:

- Finance (Data from FI & CO applications in SAP)
- Sales (Data from SD applications in SAP)
- Material & Inventory (Data from MM applications in SAP)
- APO – (Data from Demand planning and SNP modules in BW)
- Financial planning – (Data from Integrated planning module in BW)

Scope of data reconciliation:

- Between regional source systems and regional BI systems
- Between various staging areas of the regional BI systems
- Between various staging areas of the Global BI system
- Between regional BI systems and Global BI systems

Life-cycle of data reconciliation:

- Business / Report user finds a discrepancy or data error
- Data error is raised with support team
- Support team tried to analyse and reconcile the data at that point in time without any standard tools or standard procedures. Procedures and tools are thought and planned at that point in time to deal the issue.
- Support team resolves the Issue and informs the business about data availability
- Business as usual until next issue is raised.
- Issues and resolution steps are not logged anywhere for future reference.

CURRENT ISSUES:

Missing Objects:

- Data reconciliation tools
- Reconciliation plan
- Single reconciliation dashboard / cockpit which reconciles data between:
  - Regional BI system and Source systems
  - Various staging areas within Regional BI systems
  - Various staging areas within Global BI systems
  - Regional BI system and Global BI systems
  - using:
    - Finance data
    - Marketing data
    - Operations data

Missing Process:

- Existing data reconciliation steps & procedures
- Automation of the reconciliation procedure
- Publishing reconciliation results on a daily basis
- Central tool for all BI data reconciliation results and logs

Consequences:

- Data is reconciled on need basis
- Errors are accumulated and get bigger over time
- Errors are repeated as there is no solution in place to identify the errors proactively
- Reports produce wrong information causing management decision based on wrong information
- Loss of business confidence

OBJECTIVES:

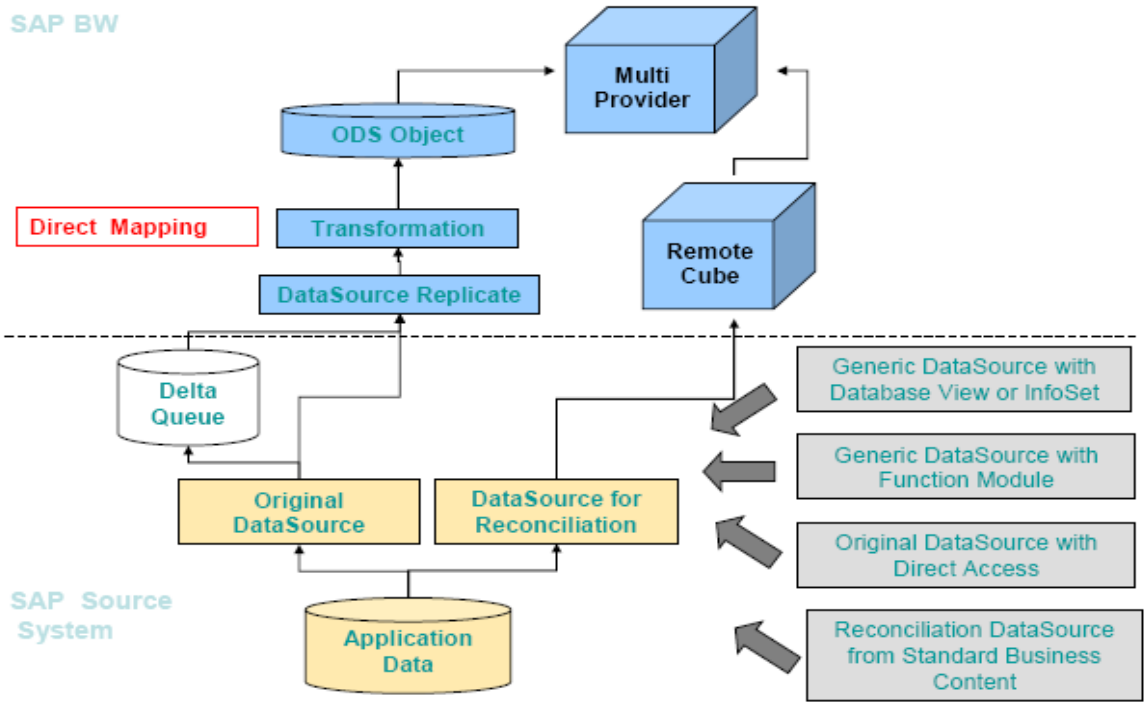
	Benefit	How to implement?
Automated data reconciliation between regional source systems and regional BI systems	➢ Business confidence ➢ Decision making on correct information	Please refer section: "NEW BI DATA RECONCILIATION APPROACH" & "BI DATA RECONCILIATION APPROACH IN DETAIL" below.
Automated data reconciliation between various staging areas of regional BI systems	➢ Business confidence ➢ Decision making on correct information	Please refer section: "NEW BI DATA RECONCILIATION APPROACH" & "BI DATA RECONCILIATION APPROACH IN DETAIL" below.
Automated data reconciliation between regional BI systems & Global BI system	➢ Business confidence ➢ Decision making on correct information	Please refer section: "NEW BI DATA RECONCILIATION APPROACH" & "BI DATA RECONCILIATION APPROACH IN DETAIL" below.
Automated data reconciliation between various staging areas of Global BI systems	➢ Business confidence ➢ Decision making on correct information	Please refer section: "NEW BI DATA RECONCILIATION APPROACH" & "BI DATA RECONCILIATION APPROACH IN DETAIL" below.
Central reconciliation dashboard / cockpit with displays reconciliation information conducted using various automated steps mentioned above	➢ Business confidence ➢ Decision making on correct information	Please refer section: "NEW BI DATA RECONCILIATION APPROACH" & "BI DATA RECONCILIATION APPROACH IN DETAIL" below. If Business Object tools are used – both BW BEX queries and SAP R/3 transactions/reports can be integrated for reconciliation; from the same dashboard page/platform.
Success & Error Notification	➢ Business confidence ➢ Decision making on correct information	Success message broadcasted if the reconciliation is successful Alert message broadcasted if the reconciliation is not successful

NEW BI DATA RECONCILIATION APPROACH:

In general there are THREE possible data reconciliation scenarios that can be applied in system in order to reconcile the data between SAP source systems and SAP BI. In addition, depending on the application area (CO, FI, SD, MM etc), some special reconciliation scenarios are available.

Reconciliation: Source system ←→ Regional BI system

- Reconciliation datasource
- Generic datasource with database view or Infoset
- Generic datasource with function module
- Direct access to datasource
    - Success message broadcasted if the reconciliation is successful
    - Alert message broadcasted if the reconciliation is not successful



Depending on whichever scenario we are going with, they all consist of the following objects:

- **MultiProvider:** The MultiProvider is used to combine data in ODS objects and data in RemoteCubes. This allows results to be compared easily.
- **Query:** A query is used to report on data from different data providers.
- **ODS object:** based on the original DataSource

Data from OLTP is loaded directly into the ODS object without any data transformation or manipulation. In some areas of the standard business content this type of ODS object has already been delivered, for example, in the CO, SRM and Logistics areas.

A RemoteCube has to be created and should be connected to the reconciliation DataSource, generic DataSource with database view, generic DataSource with function module, or original DataSource upon which you are going to apply the reconciliation scenario.

Reconciliation: Regional system ←→ Global system

- Reconciliation BEX queries from both regional system and global system are used in a dashboard; which compares set of important figures from both set of queries – at a time when data load is complete in both regional and global systems.
  - Success message broadcasted if the reconciliation is successful
  - Alert message broadcasted if the reconciliation is not successful

Reconciliation: Information data layer (DSO) ←→ Reporting data layer (InfoCubes)

- Reconciliation BEX queries from both regional system and global system are used in a dashboard; which compares set of important figures from both set of queries – at a time when data load is complete in both regional and global systems.
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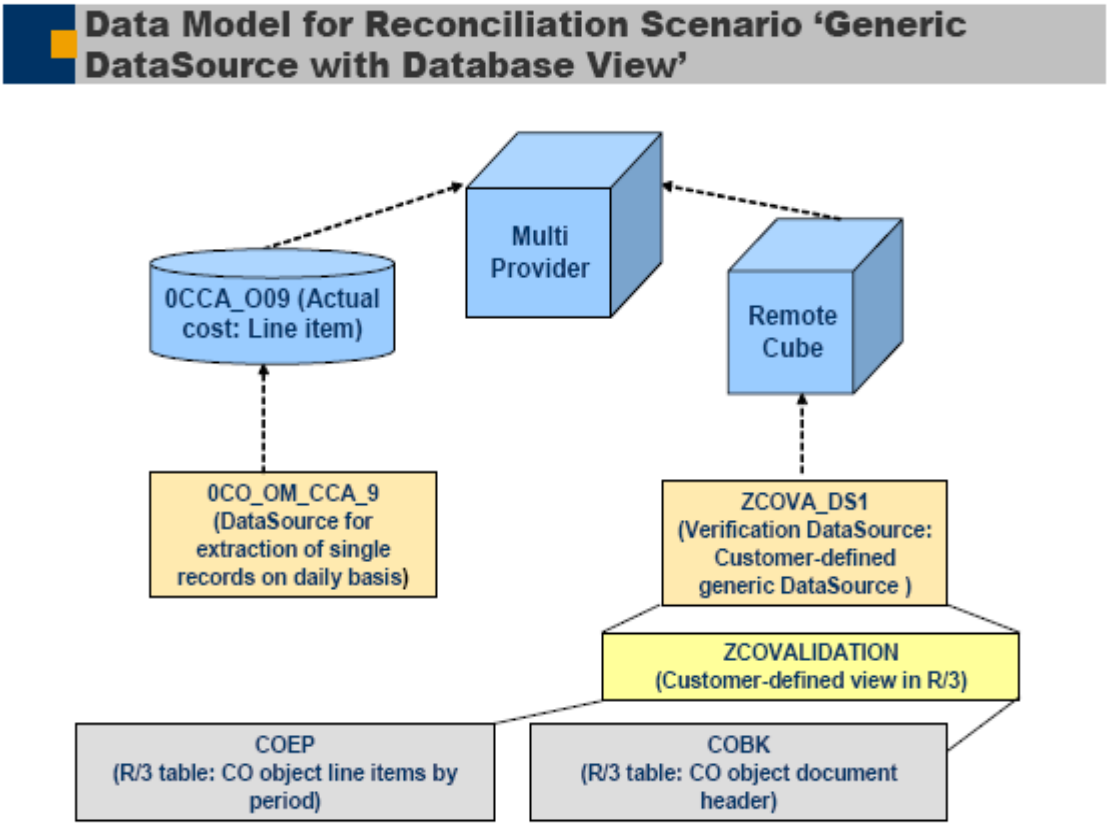
  - Alert message broadcasted if the reconciliation is not successful

Generic DataSource with Database View or InfoSet

If no reconciliation DataSource is available in the standard business content it is sometimes possible to create a customer-specific reconciliation DataSource from a database view, table or InfoSet in transaction RSO2.

Since the extraction of the data reconciliation DataSource is performed remotely, it is necessary to keep the volume of data transferred as low as possible. This process is thus not suitable at the following scenarios:

- If the volume of data to be extracted and transferred cannot be reduced effectively
- If the data that the original DataSource provides is not saved in a database table (e.g. calculated key figures).



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Reconciliation DataSource

The reconciliation DataSource is a DataSource which SAP delivers as standard business content for data reconciliation purposes. In the documentation on DataSources, a reconciliation DataSource is mentioned that can be used for reconciliation with the original DataSource. Alternatively a custom datasource can be designed for data reconciliation purpose as shown above.

Generic DataSource with Function Module

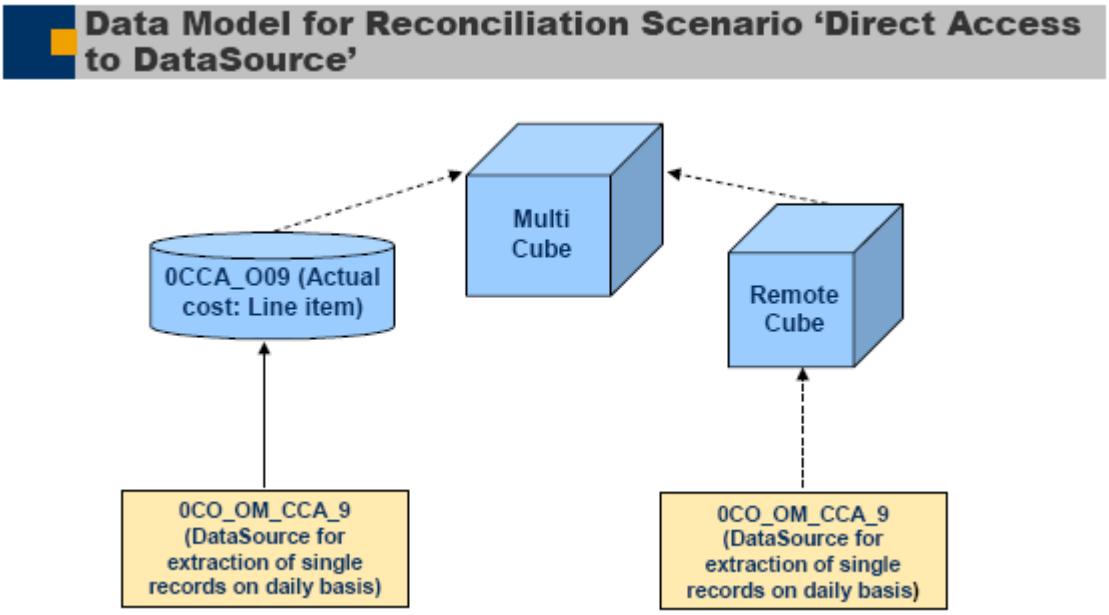
With this scenario it is possible to reproduce complex extraction logic so that the data attained is suitable for the data reconciliation. You can also restrict the volume of data to be transferred using data aggregation.

If the extraction logic of the original DataSource is highly complex, there is a danger that errors can creep into the extraction logic, leading to incorrect results in the reconciliation DataSource. Thus this scenario is only recommended for experienced developers / project team. It is not appropriate if no suitable data can be prepared for the data reconciliation due to complex extraction logic in the original DataSource.

Direct Access to the DataSource

If none of the scenarios mentioned above are applicable, data reconciliation can be performed using direct access to the DataSource. Dependent on the design, not all DataSources allow direct access. This property is stored in the ‘virtcube’ field in table roosource. If 'D' is entered in this field direct access cannot be performed. Otherwise direct access is possible, but the runtime depends on the volume of data that must be read and transferred from the database.

In order for direct access to function properly, the technical design of the system (processor, memory) must enable the user to make a meaningful selection. Since the original DataSource is applied as the reconciliation DataSource in this scenario, any inconsistencies in the administration of the delta queue can be identified.



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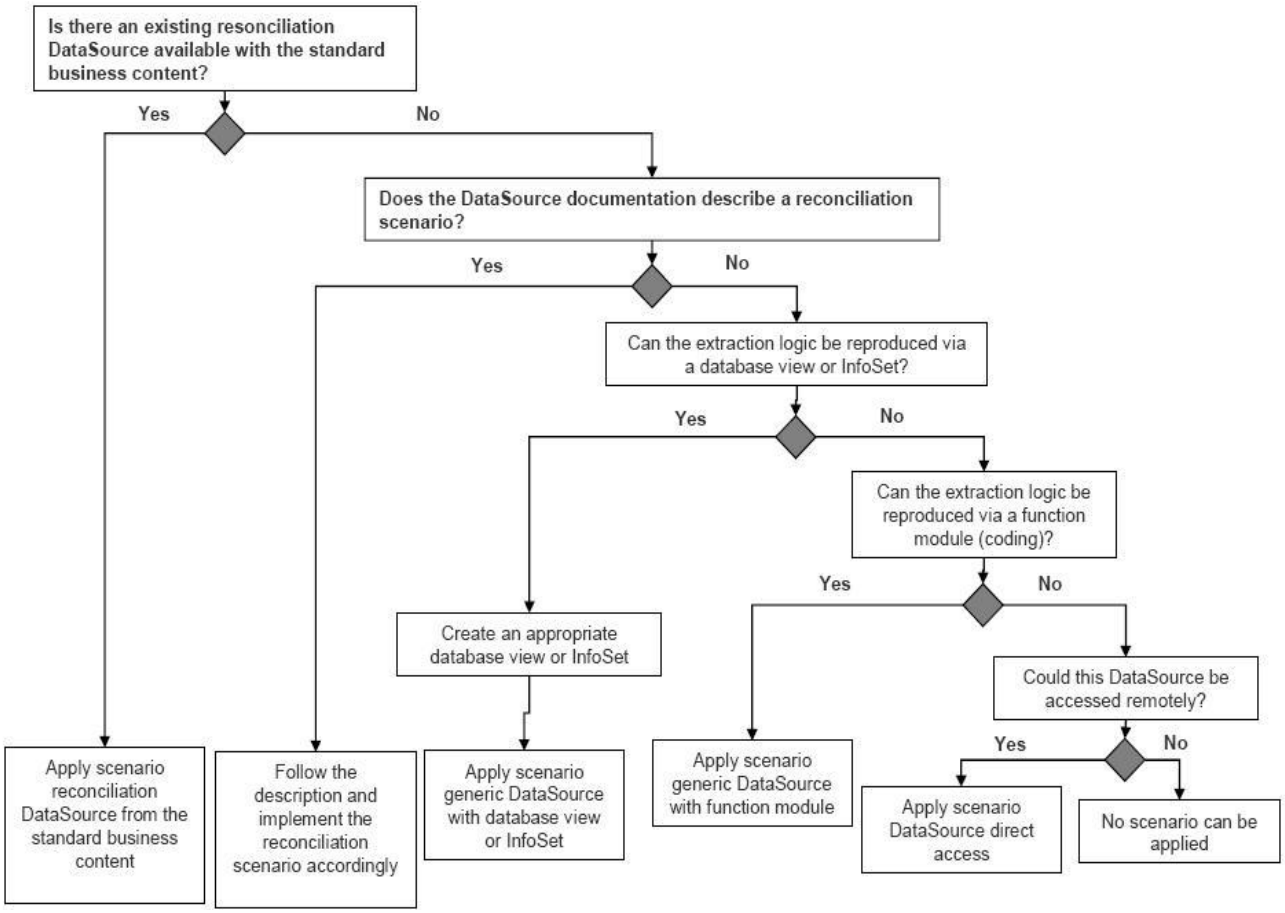
Decision Tree for Data Reconciliation Scenarios



Implementing DataSources Dependent on Reconciliation Scenarios

Scenario Reconciliation DataSource
The reconciliation DataSource technology is available as of PI-BASIS 2005.1 / SAP NetWeaver 2004s. As of PI-BASIS 2005.1 / SAP NetWeaver 2004s SAP plans to deliver reconciliation DataSources gradually within SAP applications.

Scenario Generic DataSource with Database View
This option uses the generic DataSource with a database view as the reconciliation DataSource to be compared with the original DataSource. This is also an available option for data extraction if the volume of data to be extracted is not huge.

This option is generally valid for all applications (SD, MM, QM, CO, FI, etc) for those fields that are persisting in the database table in R/3. For fields that are determined dynamically (e.g. 'open order quantity' is determined during the online transaction and stored directly in the delta queue but not in the database table), a table view cannot be applied to 'replace' the complex extraction logic.

In the CO area, every field that is relevant for the DataSource is stored in the database table in R/3. Therefore, a generic DataSource can be implemented in order to replace the original extraction logic. The results of this generic DataSource can be compared with the results of the original DataSource (original function module).

BI DATA RECONCILIATION APPROACH IN DETAIL

BI Systems

- Global BI system (B0*)
- Western Europe (B4*)
- EMEA (B7*, B0* & B4*)
- AMERICAS (B5*)
- ASPAC (B6*)

Source Systems

- Western Europe SAP System
- AMERICAS SAP System
- ASPAC SAP System
- AFRICA & MIDDLE-EAST SAP System
- APO system
- FI Planning system

DEVELOP:

Reconciliation: Source system ←→ Regional BI system

1. Reconciliation procedure between source system & (B4*) regional system for Finance application
2. Reconciliation procedure between source system & (B4*) regional system for Marketing application
3. Reconciliation procedure between source system & (B4*) regional system for Operations application

4. Reconciliation procedure between source system & (B5*) regional system for Finance application
5. Reconciliation procedure between source system & (B5*) regional system for Marketing application
6. Reconciliation procedure between source system & (B5*) regional system for Operations application

7. Reconciliation procedure between source system & (B6*) regional system for Finance application
8. Reconciliation procedure between source system & (B6*) regional system for Marketing application
9. Reconciliation procedure between source system & (B6*) regional system for Operations application

10. Reconciliation procedure between source system & (B7*) regional system for Finance application
11. Reconciliation procedure between source system & (B7*) regional system for Marketing application
12. Reconciliation procedure between source system & (B7*) regional system for Operations application

Reconciliation: Information data layer (DSO) ←→ Reporting data layer (InfoCubes)

13. Reconciliation procedures between DSO & InfoCube layers of regional system (B4*) for Finance application
14. Reconciliation procedures between DSO & InfoCube layers of regional system (B4*) for Marketing application
15. Reconciliation procedures between DSO & InfoCube layers of regional system (B4*) for Operations application

16. Reconciliation procedures between DSO & InfoCube layers of regional system (B5*) for Finance application
17. Reconciliation procedures between DSO & InfoCube layers of regional system (B5*) for Marketing application
18. Reconciliation procedures between DSO & InfoCube layers of regional system (B5*) for Operations application

19. Reconciliation procedures between DSO & InfoCube layers of regional system (B6*) for Finance application
20. Reconciliation procedures between DSO & InfoCube layers of regional system (B6*) for Marketing application
21. Reconciliation procedures between DSO & InfoCube layers of regional system (B6*) for Operations application

22. Reconciliation procedures between DSO & InfoCube layers of regional system (B7*) for Finance application
23. Reconciliation procedures between DSO & InfoCube layers of regional system (B7*) for Marketing application
24. Reconciliation procedures between DSO & InfoCube layers of regional system (B7*) for Operations application

25. Reconciliation procedures between DSO & InfoCube layers of Global system (B0*) for Finance application
26. Reconciliation procedures between DSO & InfoCube layers of Global system (B0*) for Marketing application
27. Reconciliation procedures between DSO & InfoCube layers of Global system (B0*) for Operations application

Reconciliation: Regional system ←→ Global system

28. Reconciliation procedures between global system (B0*) & regional system (B4*) for Finance application
29. Reconciliation procedures between global system (B0*) & regional system (B4*) for Marketing application
30. Reconciliation procedures between global system (B0*) & regional system (B4*) for Operations application

31. Reconciliation procedures between global system (B0*) & regional system (B5*) for Finance application
32. Reconciliation procedures between global system (B0*) & regional system (B5*) for Marketing application

33. Reconciliation procedures between global system (B0*) & regional system (B5*) for Operations application

34. Reconciliation procedures between global system (B0*) & regional system (B6*) for Finance application
35. Reconciliation procedures between global system (B0*) & regional system (B6*) for Marketing application
36. Reconciliation procedures between global system (B0*) & regional system (B6*) for Operations application

37. Reconciliation procedures between global system (B0*) & regional system (B7*) for Finance application
38. Reconciliation procedures between global system (B0*) & regional system (B7*) for Marketing application
39. Reconciliation procedures between global system (B0*) & regional system (B7*) for Operations application

MANAGE

- If reconciliation procedures are designed discretely for their purpose & reconciliation type - It will be easier to choose and use based on the exact requirement than trying to reconcile the data without a clear direction.
- It is always better to be proactive with the data reconciliation than waiting for an issue to be logged by the user. This can be achieved by automating the reconciliation procedure.
- Reconciliation procedures can be automated by scheduling associated jobs and publishing the results in a dashboard. These can be linked to the process chains or be part of the process chains.
    - Success message broadcasted if the reconciliation is successful
    - Alert message broadcasted if the reconciliation is not successful
- Business user can have access to the data reconciliation portal or dashboard to check the status by themselves. They can also run the reconciliation jobs/steps manually to check the current status at any point in time during a day.

TECHNICAL STEPS & OPTIONS:

Reconciliation STEP 1	**BI System**	**Source System**	**Dashboard / Cockpit**
Regional Source ←→ Regional BI	Regional BI data using BEX queries	SAP R/3 data using BI Remote Cube concept and BEX queries	Integrate in the BW/BO Dashboard
Regional Source ←→ Regional BI	Regional BI data using BEX queries	SAP R/3 data using Business Object tools and SAP transactions/reports	Integrate in the BW/BO Dashboard
Reconciliation STEP 2	**Regional BI System**	**Global BI System**	**Dashboard / Cockpit**

Regional BI ←→ Global BI	Regional BI data using BEX queries	Global BI data using BEX queries	Integrate in the BW/BO Dashboard
Regional BI ←→ Global BI	Regional BI data using BEX queries	Global BI data using BEX queries	Integrate in the BW/BO Dashboard
Reconciliation STEP 3	**Regional BI System**	**Regional BI System**	**Dashboard / Cockpit**
Regional BI ←→ Regional BI	Regional BI data using BEX queries	Regional BI data using BEX queries	Integrate in the BW/BO Dashboard
Regional BI ←→ Regional BI	Regional BI data using BEX queries	Regional BI data using BEX queries	Integrate in the BW/BO Dashboard
Reconciliation STEP 4	**Global BI System**	**Global BI System**	**Dashboard / Cockpit**
Global BI ←→ Global BI	Global BI data using BEX queries	Global BI data using BEX queries	Integrate in the BW/BO Dashboard
Global BI ←→ Global BI	Global BI data using BEX queries	Global BI data using BEX queries	Integrate in the BW/BO Dashboard

PROJECT EXECUTION APPROACH:

Plan / Approach	**By Region** (B4, B5, B6, B7)	**By Function** (APO, MKTG, FINANCE)
Short-term Plan **(Next 2 months)**	Prepare As-is	Prepare As-is
	Design to-be	Design to-be
	Consolidate current Issue logs	Consolidate current Issue logs
Long-term Plan **(Next 12 months)**	Prepare reconciliation procedures between regional source system & regional BI system	Prepare reconciliation procedures between regional source system & regional BI system
	Prepare reconciliation procedures within various staging areas of the regional BI system & Global BI system	Prepare reconciliation procedures within various staging areas of the regional BI system & Global BI system
	Prepare reconciliation procedures between regional BI system & global BI system	Prepare reconciliation procedures between regional BI system & global BI system
	Test above developments	Test above developments
	Deploy the solution in various system landscape	Deploy the solution in various system landscape
	Prepare solution documents	Prepare solution documents
	Prepare hand-over document	Prepare hand-over document
	Production cut-over	Production cut-over
	GO-LIVE	GO-LIVE

RESOURCE REQUIREMENT:

Plan / Approach	From Business	From GSDAUTH	From Technology
Short-term Plan **(Next 2 months)**			
Long-term Plan **(Next 12 months)**			

PROJECT PLAN:

To be furnished – after initial project scoping

PROJECT RESOURCES:

Name	Role	Function
		Part-time
		Part-time
		Part-time
		Full-time