Technical Considerations in Global SAP BW/HR Implementations

Applies to:
SAP BW/HR implementations

Summary
Global SAP BW/HR implementations stand apart from other SAP BW implementations in multiple respects. With this paper, the author intends to share his experiences with multiple SAP BW/HR implementations. Technical implementation considerations from SAP BW point of view are presented. More emphasis was given to HR specific topics of SAP BW than generic BW practices. These implementation experiences were presented in alignment with the 4 phases outlined by Global Template Roadmap provided by SAP.

To begin with, typical challenges with SAP BW/HR implementations were discussed. Subsequently, solution alternatives were presented to handle these challenges. Technology components in BW/HR solution landscapes were highlighted along with their relevance. Implementation approaches and alternatives in modeling SAPBW as a HR data warehouse were examined. Several issues that might come up in data acquisition, harmonization, consolidation and presentation were discussed and experiences in managing these issues were shared. Solution options to handle privacy and legal requirements were presented along with the pros and cons of each option.

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# Table of Contents

Author Bio ........................................................................................................................................ 1

1. Assumptions ................................................................................................................................ 3

2. Typical Challenges for Global SAP BW/HR Implementations..................................................... 3

3. Introduction to Global Template Roadmap .................................................................................. 4

4. Phase 1: Global Program Setup ................................................................................................... 4

5. Phase 2: Global Business Blueprint ............................................................................................ 6

6. Phase 3: Global Realization ........................................................................................................ 9

6.1. Data Acquisition ........................................................................................................................ 9

6.2. Data Harmonization ................................................................................................................ 10

6.2.1. How to Uniquely Identify an Employee ................................................................................ 10

6.2.2. How to Identify Duplicates ................................................................................................... 11

6.3. Data Consolidation/Integration in BW ..................................................................................... 11

6.4. Data Presentation/ Reporting ................................................................................................. 12

6.4.1 Handling Time Dependencies .............................................................................................. 12

6.4.2. Modeling Evaluation Ranges in BW .................................................................................... 13

6.4.3. Handling Privacy Requirements .......................................................................................... 15

7. Phase 4: Global Maintenance and Support ............................................................................... 17

8. Conclusion ................................................................................................................................. 18

References: ................................................................................................................................... 18

Disclaimer and Liability Notice ....................................................................................................... 19
1. Assumptions
   1. The global SAP BW/HR implementation primarily intends to satisfy the global HR reporting requirements.
   2. There may or may not exist local BW instances, catering to the local HR reporting requirements.

2. Typical Challenges for Global SAP BW/HR Implementations
   1. HR processes and terminology in several cases can be quite complex. The definition and the interpretation of several terms can vary considerably across geographies and business units of an organization. Availability of a ‘global data catalogue’ with common data definitions is difficult in several global organizations. This common global data catalogue, however, forms the basis for the design of infoobjects in BW, which are the foundation stones for the BW solution.
   2. It is difficult to separate transactional data and master data in a HR environment. Due to the inherent nature of human resource business, most of the HR related information revolves around people. Thus, several HR transactions can be easily associated to an employee, rather than as a separate transaction. This leads to different scenarios in the way master data is handled and InfoCubes are designed in BW/HR systems as compared to other SAP BW implementations.
   3. Unavailability of a consistent and globally harmonized Organizational/Personnel/Job structures makes data mapping and harmonization an arduous task in BW/HR implementations.
   4. Disparate transactional systems scattered across the globe identify employees with their own Local Employee IDs. This necessitates that Global BW/HR implementations device a methodology to uniquely identify employees within the global BW system. The unique ID creation process must be robust enough to identify duplicates, transfers, international assignments etc.
   5. Reporting requirements can vary considerably across business units and geographies. This makes it difficult for the functional teams to come up with a global template that satisfies business users across different geographies and business units.
   6. HR information in certain cases is quite sensitive and its distribution is governed by privacy and legal regulations. This calls for good security and authorization processes to be in place.
   7. HR users are typically not as technically savvy as other domains of business like Finance, Logistics etc. This results in the following:
      a. Translation of business requirements to BW technical requirements is difficult and hence requires the assistance of techno-functional consultants.
      b. Need to design reports that are simple yet provide all the necessary information.

In the subsequent sections, I would like to discuss certain BW technical implementation considerations, which would aid in overcoming the above mentioned challenges or at the least provide you with different solution alternatives. These implementation considerations are aligned with the four phases outlined by SAP in the Global Template Roadmap [1].
3. Introduction to Global Template Roadmap

The Global Template Roadmap provides a set of tools, methodologies, content and programs designed to help customers implement their mySAP.com solution on a global scale. It describes how to organize and run a project in which a corporate template is developed. The Global Template Roadmap is geared to complex implementation or harmonization projects, typically involving more than one kind of SAP solution, and a variety of sites, possibly in different countries. The corporate template is rolled out to other sites in a follow-up project.

The 4 Phases of Global Template Roadmap are:

- Global Program Setup
- Global Business Blueprint
- Global Realization
- Global Maintenance and Support

With this quick introduction to Global Template Roadmap, let me take you through some of the BW technical implementation considerations in each of the four phases mentioned above.

4. Phase 1: Global Program Setup

Every successful project begins with careful preparation. The purpose of the Global Program Setup phase is to initiate a global implementation and management program.

One of the important technical activities in the phase is to come up with an "Application Blueprint" that supports not only the current requirements, but also is flexible enough to handle any future requirements. More over, the important technology components required to be part of the solution landscape should be finalized. Following technology components are not uncommon together with SAP BW in the BW/HR application landscapes of several companies:

1. ETL Tools – to facilitate data Extraction, Transformation and Loading to BW.
   
   In cases where there are several disparate source systems or there are complex data transformations that require looping through data multiple times, an ETL tool can be looked at.

2. Master data management tools for enterprise wide master data management.
   
   In these days of ‘enterprise-wide data warehousing’ [2] initiatives, it is imperative that master data is managed centrally and in an integrated way. This is especially true in scenarios where the customers want to integrate their master data management maintenance workflows in their intranets or into their enterprise portals.

3. SEM BPS for HR planning and forecasting data.
Since Planning & Forecasting data viz. Headcount targets, Targeted Turnover rate of employees, Benchmark figures etc. are available at an aggregated level, with lesser frequency and desired by limited group of people, the information can be made available thru SAP BW transactional cubes via SEM Layouts and published as URLs.

4. Custom data presentation tools/workbook and web enhancement toolkits.

With the latest enhanced BW Web reporting functionality, the need for other front end solutions has considerably come down. However, due to very special and complex report presentation requirements or may be due to historical reasons, certain customers may prefer to use a third party report presentation tool. In certain cases, toolkits to enrich the standard BEx/web reporting functionality were used to enhance end user experience. However, SAP provides open interfaces to several other front end solutions to facilitate the realization of these special requirements.

5. Custom web-based applications for data acquisition.

In HR implementations, it is quite common to use flat files for data acquisition (more details in chapter 6.1). A custom built web solution for master and transaction data acquisition provides a common interface for end users responsible for providing this information (without needing to logon to BW or to do an FTP of data).


One of the reasons why testing is not done on a full scale using real data in several implementations, is the data privacy requirements. This is even severe in HR reporting due to the presence of critical performance and compensation information. A shallow testing would result in considerable problems during Go-Live phase, when real data arrives in to the system. This makes data anonymization an important activity in HR/BW implementations.

More over, the resultant data set after anonymization should be complete and meaningful enough to check all scenarios covered by the test scripts. In addition, training preparations would have to start while the application is being tested. The reports executed with anonymized data should provide meaningful outputs, which are understandable by the training audience. With these points in mind, the need for a data anonymization tool, in a BW implementation, can not be underestimated. There are several products available in market to anonymize data.

Evaluation of all these application/technology components, in relation to the overall reporting requirements, is important to make realistic plans during the blueprint phase and also to make necessary staffing and training arrangements.
5. Phase 2: Global Business Blueprint

During this phase, project team carefully defines and documents the business processes that are global in nature. This includes standardization, reporting, master data, parameters, interfaces conversions, etc, that forms the basis of the global template. The primary objectives of this phase are:

- Create the global business blueprint
- Develop the global environment
- Install and configure the technical environment for the template system

In order to achieve the above mentioned objectives, it is imperative that functional teams are asked right questions (from a BW point of view). These questions and answers must be documented during blueprint phase. Few of the questions are:

1. What is the expected performance of reporting for reports of different categories (Overview reports, historical data reports, employee detailed reports, etc.)?
   This information is important for the technical teams to come up with proper system sizing and in designing the data-warehouse components. This would also help the program management in coming up with proper expectation management initiatives during program communication.

2. How frequently you want to look at the data? Daily/ Monthly/ Quarterly/ Annually.
   This decision has lot of bearing on the following:
   a. Data acquisition/harmonization strategies to be adapted
   b. Storage requirements (hard disk capacity, archiving requirements)
   c. System adaptability for future reporting requirements
   d. Data outbound requirements to other systems (BW as a source system)

   Typically, the lowest time granularity in HR reporting is a month. Aggregations over periods of time like quarter, semester or annum are common occurrences.

3. Is there is a global data catalogue available for your HR terminology?
   The global data catalogue with common data definitions forms the basis for the design of the InfoObjects in SAP BW, which forms the foundation blocks of the BW solution. A lack of common data definition means frequent changes to the InfoObject metadata during the project phase and in some cases even after Go-live.

4. Do you have a documented list of all business rules that are relevant in the context of a HR BW solution?
   These business rules form the basis for data validation and harmonization within and across systems. Examples of business rules are:
   1. If an employee is a rehire, service date is the date of re-entry into the organization, not the date of first hire.
   2. To consider an employee as a leaver, a proper leaving reason must exist etc.

   These business rules may vary from organization to organization. Distinction has to be made between local business rules and global business rules.

5. Which data is ‘mandatory’, ‘not mandatory’ and ‘mandatory defaulted’ from the source systems?
   This information is critical as unavailability of mandatory data from certain source system may make the aggregated reports unusable. On the other hand, several validation rules would be built (in BW or in external ETL tools) based on characteristic values. Creating validation rules on non-mandatory fields does not make sense.
6. Are all reporting requirements documented together with the navigation requirements?

   It is important that all reporting functional requirements are clearly articulated and documented to
   serve as a baseline for development, test and support.

   Asking these questions early in the project would help in deciding the best “implementation approach” to
   be followed to realize the business requirements.

   The BW/HR reporting is significantly different from the other functional areas like sales and finance. HR
   transactions mostly revolve around people entities like employee, applicant etc., and not around
   “Transactions”. While data reported in other applications is mostly aggregations of key figures from
   millions of transactional documents over several dimensions like customer, product, time etc. (sales
   revenue in month, Deliveries per customer etc.); HR reporting focuses mostly on key figures built around
   employees at any given “point in time” (for example, headcount as of 31/12/2005 or Average Gross
   salary of employees at the end of 1st quarter 2005). This requires looking at HR data as a ‘Snapshot’,
   rather than, as a continuous flow of transactional data.

   Choosing a snapshot approach in BW means full upload of employee data from source systems once in
   every snapshot period.

   Here are few differences of snapshot approach as compared to a delta load approach adopted in from
   intensive transactional applications (like sales and distribution).

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Transactional Delta load approach</th>
<th>Snapshot approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Data arrives in delta from source systems. This means, only changes to existing data records or new data records are loaded.</td>
<td>Data arrives BW in full updates “as of” a given snapshot.</td>
</tr>
<tr>
<td>2</td>
<td>Time dimension is determined by transactional date fields like Order date, purchase date etc.</td>
<td>Time dimension is determined by business reporting needs. It can be daily, monthly, quarterly or annually. Underlying HR source systems should be able to provide data as per the snapshot frequency.</td>
</tr>
<tr>
<td>3</td>
<td>Extractor design can be complex, but is suitable for high volumes of data extraction.</td>
<td>Simple Extractor design and is suitable for scenarios where up-to-the-minute reporting is not required.</td>
</tr>
</tbody>
</table>

   The snapshot approach in HR area is even reflected in the SAP BW/HR standard content, where most of
   the extractors are of the type ‘full update’ and do not support delta.

   Here are some other technical specifics with respect to snapshot approach:

   1. Employee information must be available with all the relevant details, at least once per snapshot
      (even if there are no changes from previous snapshot), from all the source systems.
   2. Data can be retained in the system for past periods. This is possible by keeping the time
      characteristic that defines the snapshot (lets say 0FISCPER or OCALMNTTH) in the key section
      of the ODS object.
   3. Changes to an employee record as of a given snapshot can be achieved by resending the data
      by the source systems for the same snapshot.
Snapshot approach may result in higher data volumes as compared to a traditional delta approach, but the simplicity and lower data volumes in HR area are some of the several factors that may make this option viable in BW/HR implementations.

After asking the right questions and finalizing the implementation approach from a BW solution point of view, the BW teams can go ahead in to the realization phase.

By this time, business blue print would have been created with details of customer requirements for global business processes, global reporting, global master data standardization, global parameters, global interfaces with legacy systems and global conversions. Global environment would have been set up in the form of establishing policies, defining release strategies, drafting development guidelines, naming conventions, etc. Installation and configuration of technical environment would have been completed by setting up technical infrastructure, system landscape, client configuration and transport management configurations.
6. Phase 3: Global Realization

In this phase, the global template developed in blueprint phase will be used to configure a reference global solution containing all global functionality. Subsequently, the template will be rolled out to the local sites. At each location, the global template is refined to address unique local requirements.

Thus, this phase marks the translation of plans laid out in blueprint in to a configured application and hence most of the technical questions would arise.

A typical SAP BW/HR implementation has basically to deal with the following technical activities during global realization phase:

1. Data Acquisition
2. Data Harmonization
3. Data Consolidation/ Integration and
4. Data Presentation/ Reporting

Following are some technical considerations during each of these four activities:

6.1. Data Acquisition

One of the important challenges faced by Global BW/HR implementations is data acquisition. This is due to the fact that HR transactional systems that source data to BW vary considerably in their technologies, data quality and data volumes.

Here are certain kinds of sources for HR data:

1. Local HR transactional systems.
2. Global systems that may provide certain global data about employees across source systems.
   For example, global potential rating may be available from an existing global system for employee performance management, while the number of stock options held by an employee may be available from another global system.
3. Planning or budget information set by corporate executive groups. These planning tasks may be managed via a global system for planning or even using spreadsheets.

Moreover, the fact that several geographies may not even have a dedicated system for HR operations, makes it even more important that the data acquisition strategy is simple enough to be able to capture data from all kinds of source systems.

Data from these systems can be integrated to BW with varying degrees of difficulty based on the way the standard interfaces or adapters are configured and made available by SAP. However, here are some points to consider with this way of receiving data from disparate source systems:

1. Configuring extractors for each kind of source system (like R/3, Peoplesoft, Relational data bases, Legacy systems, etc.) consumes lot of time during rollouts. Thus, synergies from template could not be fully leveraged.
2. Data harmonization efforts (for example, de-duplication of data) may require putting the data from multiple sources together even before the integration happens in BW.

In order to overcome the above mentioned challenges, several companies have adopted a flat file interface for data acquisition from all source systems. The interface file specification could be designed and submitted to all source systems and they can be asked to submit their HR data files in that format. Data thus received can be loaded to BW via the standard flat file source system provided by BW.
Additional support arguments relevant to flat file approach in HR data acquisition are:

1. It is simple and any source system, how-so-ever small can create flat files and render their HR data.
2. Number of employees in a single HR source system would not probably exceed a few tens of thousands, how-so-ever big the system may be. So, data volume is not an issue.
3. Data integration for harmonization efforts could be easily achieved even prior to loading data in BW.
4. Even if direct interfaces are used to connect certain systems (like direct connection to R/3 system or Peoplesoft system), flat file interface still needs to be configured in BW to accommodate data acquisition from several small source systems. So, why not leverage it across all sources and thus use a single means of data acquisition.
5. Flat files can be received via internet, SEM BPS web layouts or even through FTP. This considerably reduces overhead in configuring and maintaining connections with multiple systems.

There are, however, certain cons of this approach as follows:

1. A process must be devised to handle the flat files. Facilities and tools should be provided to the local source systems to make this process easy to handle and flexible.
2. With very heavy data volumes, this approach may be less effective.
3. Central storage and data privacy requirements should be considered carefully.

However, the decision of choosing a correct data acquisition strategy depends on several other factors like the number of source systems, IT infrastructure available, end user convenience, HR/IT strategy of the company, etc.

6.2. Data Harmonization

There are several challenges to data harmonization efforts across disparate sources in HR landscape. Some of them are:

6.2.1. How to Uniquely Identify an Employee

Several source systems may identify employees with IDs that are local to the system. This requires that global BW/HR system develop a process of uniquely identifying an employee. Multiple options are available in BW to handle such requirement:

1. While loading employee master data into BW, concatenate or compound the local employee ID with the source system ID to get the global employee instance. All employee attributes would be stored with this global employee instance.

   The advantage of the above process is that you get a global view of entire data, with little data redundancy. However, the detail at which master data is available may be different across systems, which makes operational reporting difficult.

   In addition to the global employee instance, Separate Local employee instances for each source could be maintained at the highest detail possible. In such a case, care should be taken not to flood the global employee key with too many attributes of the local views. Only attributes relevant for global reporting should be included.

2. Another option would be to define a criterion for global unique employee ID generation by using meaningful employee attributes that do not change often. Organizational/ geographical attributes would not make good candidates as an employee may move across organizational units or geographies quite frequently. Personal attributes, on the contrary do not change that frequently. Some source system related information can be used as well. However, all these attributes that define the unique employee ID must be mandatorily available from each source system.
6.2.2. How to Identify Duplicates

This scenario occurs especially when there are lots of movements across geographies. The same employee may appear multiple times from the same source system or from multiple source systems.

Process steps for duplicate resolution are:

a. Define the criteria to identify duplicates. This could go together with the criteria used to determine the unique ID of an employee.
b. Mark duplicate records during data validation/harmonization process.
c. Resolve duplicates via manual or automatic means.
d. Process non duplicate records further.

6.3. Data Consolidation/Integration in BW

Data consolidation/ integration is achieved in BW by technical objects called ODS objects. ODS objects can be used logically on any number of levels.

The granularity difference, at which information is available from multiple source systems, has a bearing on the ODS design. In HR, the entities that determine granularity of data, are typically the time and the employee. While data from certain sources is of the same granularity, in other cases it may be different. Examples of such information are number of internal hires in a business geography, targeted attrition rate for a given year, etc. In such cases, consolidation happens at a slightly higher level than the employee level.

Thus, There can be only one level of ODS objects, if the granularity of data coming from all the source systems is the same in all respects. Even if the granularity is not the same across the source systems, a single level of ODS objects could be used if information loss is permitted due to aggregation at the lowest possible granularity.

On the other hand, if the granularity differences from different source systems is not the same, multiple levels of ODS objects are needed for information consolidation. First level of ODS objects can act as a staging area for the incoming data at the same granularity and detail as that of the source system. Due to this, there will be no information loss. The second level of ODS objects can contain a consolidated data set with HR information from all local HR systems, all global systems and derived/calculated information that requires to be staged.
6.4. Data Presentation/ Reporting

Having acquired and consolidated the data in the warehouse layer, it is time to publish the data in the form of reports to the HR end users. This is achieved in SAP BW by creating subject oriented, multi-dimensional structures called InfoCubes. Reports are created over these InfoCubes. The number of InfoCubes is governed not only by the functional reporting requirements, but also on other requirements like ownership of the functional area, authorization requirements, future maintenance requirements etc. Here are some implementation aspects during this stage:

6.4.1 Handling Time Dependencies

Several times, discussions between functional teams and technical teams can be very confusing with respect to time dependency. Hence it is important that a common understanding be achieved with respect to the terminology used before starting to discuss this topic across groups.

There are multiple “reporting scenarios” possible with respect to time dependency:

1. ‘Today is yesterday’ or today’s constellation is the truth
2. ‘Yesterday is today’ or yesterday’s constellation is the truth
3. ‘Yesterday or today’ or report the historical truth
4. ‘Yesterday and today’ or report the comparable truth

These scenarios were adequately discussed in the ASAP for BW accelerator: “Multi dimensional Modeling with SAP BW” [3]

In order to achieve the above mentioned reporting requirements, time dependencies ‘within’ and ‘across’ business entities need to be studied.

*Time dependencies across business entities:*

1. Time dependency between business entities in a hierarchy.
For example, in a simple geography hierarchy with region as the root node and country as the leaf node, the relationship between region and country may be time-dependent/time-independent.

2. Time dependency between employee and the leaf node of hierarchy.

In the above example, the relationship between country and region may be time-dependent, but the relation between employee and county (which is the leaf node of hierarchy) may or may not be time dependent, as per business requirements.

3. Dependency between an employee and any other business entity.

For example, is Nationality time dependent with respect to employee ID?

**Time dependency within a business entity:**

4. Time dependency between characteristic IDs and their texts (this can also be referred to as time dependency of values)

   For example, an entity called “city” may have a value (an occurrence) CITY100 standing for Bombay until year 2000, but may be called Mumbai afterwards.

However, it is not enough to study the above mentioned kinds of time dependencies to realize the different reporting scenarios with respect to time. Several other business requirements may impact the BW data model design in relation to time dependencies.

Few of them are:

1. Handling retro active changes of employee information
2. Retro active changes of master data/hierarchies
3. Reporting and loading performance
4. Business user preferences in reporting

### 6.4.2. Modeling Evaluation Ranges in BW

Typical occurrences of evaluation ranges in HR reporting are age range or working time range. Modeling of such ranges depends on the reporting requirements and the ease with which these ranges can be maintained. Multiple options exist in BW to handle evaluation ranges:

1. **By using BW external hierarchy**: For example, Age and Age Range can be modeled as different nodes of a BW external hierarchy.
2. **Internal hierarchy (Attribute of Characteristic)**: For example, Age Range can be modeled as an attribute of Age. Such kind of modeling can also be referred to as “Hierarchy as a flat structure”.
3. **Dimension Characteristic of InfoCubes**: For example, Age and Age Range as dimension characteristics of InfoCubes.

### Differences between External Hierarchy and Attribute of Characteristic

<table>
<thead>
<tr>
<th>S.No</th>
<th>Criteria</th>
<th>SAP BW external hierarchy</th>
<th>Attribute of a characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Maintenance</td>
<td>1. Manual Maintenance of hierarchy</td>
<td>Its easier to maintain a flat structure using flat files</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Loading an external hierarchy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>via a flat file</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Flexibility to changes in organizational structure</td>
<td>Relatively easy to incorporate changes</td>
<td>Less flexible. May requires changes to the InfoCube modeling</td>
</tr>
<tr>
<td>3</td>
<td>Number of levels</td>
<td>Best suits for higher number of hierarchy levels</td>
<td>Best suited for lesser number of levels</td>
</tr>
<tr>
<td>4</td>
<td>Performance</td>
<td>Reporting performance may deteriorate with complex hierarchies with multiple levels</td>
<td>Relatively higher performance</td>
</tr>
<tr>
<td>5</td>
<td>Reporting with respect to historical data</td>
<td>Versioning of hierarchies is possible, but with an additional overhead of maintenance</td>
<td>Relatively easy</td>
</tr>
<tr>
<td>6</td>
<td>Ease of maintenance of authorizations</td>
<td>Relatively difficult (separate authorization object needed)</td>
<td>Relatively easy</td>
</tr>
</tbody>
</table>
| 7 | Reporting Considerations | Few examples: 
(-) You need to show a full hierarchy, even if you just want the first and last levels of hierarchy in the report  
(+) You can expand to the lower levels for a single node if required | Few Examples:  
(+) The full hierarchy need not be shown if the requirement is just to show the highest and lowest levels of hierarchy in the report  
(-) All values of a lower level characteristic will be shown if you drill down |
| 8 | Mapping complex organizational structures | Best suited for modeling any complex balanced/unbalanced hierarchies (1 x n) | Best suited for network hierarchies (a node with multiple parents) (n x m) |

**Differences between Dimension Characteristic and Attribute of a characteristic**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Consideration</th>
<th>Dimension Characteristic</th>
<th>Attribute of a characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Availability of Master data changes to reporting</td>
<td>Depends on the data refresh from ODS to Cube.</td>
<td>Immediate. Only ‘Attribute Change Run’ needs to be performed.</td>
</tr>
</tbody>
</table>
### Usability for business users

| 2 | **Usability for business users** | Business users see the data as of the last InfoCube refresh from ODS. No need to enter a key date while executing reports. | Business users have to enter a key date for choosing appropriate hierarchy. |

### Usability for BW administrators

| 3 | **Usability for BW administrators** | Data shown by cube may be different from the Data available in the ODS. | What ever is available in cube corresponds to the data available in ODS. So, Less confusing. |

### Flexibility

| 4 | **Flexibility** | Low | High |

### Administration effort

| 5 | **Administration effort** | InfoCube needs to be refreshed whenever there is a request to see the master data changes in the reports. | InfoCube needs to be refreshed only when ODS is refreshed. |

### 6.4.3. Handling Privacy Requirements

Global HR reporting systems have additional challenges of adhering to privacy and legal requirements of several countries. For example, certain entities like age, gender, ethnicity, etc. are not allowed to be distributed as per the local laws of certain countries. However, in certain other countries, it is allowed to use this information in some kind of diversity reports.

Handling diverse privacy requirements, requires a close cooperation across legal departments, BW security specialist, functional specialists and BW solution architects.

Multiple technical options exist to realize requirements of varying degree of criticality:

1. **Exclude privacy relevant entities completely from the global reporting scope.** This should be taken care of by functional experts in conjunction with end users.

   **Pros:** 100% Secure, no hassles of what-so-ever with privacy requirements. Technically, nothing needs to be done.

   **Cons:** Makes secure data completely unavailable; even to make some important decisions regarding employee welfare, etc.

2. **Accept privacy relevant information from all geographies, but do not make them available in cubes and reports. Store such information in the BW data-warehouse layer comprising non-reporting relevant ODS objects.**

   **Pros:** Since data is available in the warehouse, information can be made available as per changing privacy/ legal environments in future.

   **Cons:** Data of countries/legal entities with not so stringent privacy requirements is not available currently for reporting,

3. **Accept privacy relevant information from all geographies and make such information available in special cubes meant for some special requirements like employee diversity classification, etc. However, these cubes and reports should be marked as highly confidential and made available to a very limited group of people who are authorized to access such information.**
Pros: Data is available for special requirements.

Cons: Strict access control processes should be in place for access to these “special” cubes and reports. Data of countries/legal entities with not so stringent privacy requirements is not available for reporting on other “normal” cubes.

4. Accept privacy relevant information from all geographies. Make such information available in all relevant cubes and control the access to such information in the reports via proper authorization concept and role definitions.

Pros: Data of countries/legal entities, with not so stringent privacy requirements, is available for reporting.

Cons: Strict access control processes should be in place for all cubes and reports; New or ad-hoc report creation should be strictly controlled as data is available in cubes; certain changes to data model may be required to overcome some limitations with security features available in BW.

5. Accept privacy relevant information from all geographies. Make data from countries/geographies with not so stringent requirements available in the cubes. But for countries with privacy regulations, load the data after masking it appropriately. For example, gender Male (M) and Female (F) can be masked with “Not Disclosed (Z)”. This masking can be achieved in the update rules of the cubes.

Pros: Data of countries/legal entities with not so stringent privacy requirements is available for reporting; new or ad-hoc report creation need not be as controlled as it was in the previous option

Cons: Separate cubes are required to cater to special reporting requirements as explained in option 3.

Each of the options as discussed above, has its own advantages and disadvantages relative to the other. These options and their variants can be mixed and matched to achieve the reporting requirements of each organization in relation to the legal and privacy requirements. But, the important point is that “privacy and legal requirements must be handled” and needs to be taken care right from blue print phase.
7. Phase 4: Global Maintenance and Support

Because global implementations tend to span over several years, there is a need to support live sites as well as future rollouts. Knowledge gained during site implementations is incorporated back into the global template and made available for continuous improvement.

The purpose of this phase is to provide global maintenance and support for sites where SAP is in production while additional versions of the template and additional rollouts are in development. The primary objectives of this phase are:

- Provide support to local rollout team during implementation and to local sites after going live
- Provide input for new template versions
- Continuous improvement
- Define long-term plans
- Enable the formal program, as defined by the program scope, to be closed

Important technical considerations in this phase are:

1. Follow the naming conventions laid out by template for local development.
2. Adopt a bundled approach to roll out changes to template.

   It’s common that the template needs to be fine-tuned as you progress forward with rollouts. It’s important that you bundle such change requests together and make them available as a mini release. This helps in communication with local countries about the changes and also gives a stable template for the on-going rollouts.

3. Keep the rollout and bug-fixing landscapes separate as far as possible. Keep them synchronized at regular intervals.
8. Conclusion

Essentially any warehouse design is a compromise. This is also true with SAP BW/HR global implementations. Several balancing decisions have to be made throughout the solution life cycle to manage conflicting requirements like:

a. Reporting performance versus Loading performance  
b. Report details versus Security requirement  
c. Report quality versus Data quality  
d. User friendliness versus Development complexity/ Timelines, etc.

This paper presented several technical considerations during each phase of a global SAP BW/HR implementation that should help you in this decision making process.

References:

[1] Global Template Roadmap details can be found out on SAP Service marketplace: [www.service.sap.com](http://www.service.sap.com)


[3] “Multi-Dimensional Modeling with BW, A background to the techniques used to create SAP BW InfoCubes”, Document Version 2.0. This documents is available on SAP Service marketplace: [www.service.sap.com](http://www.service.sap.com)
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