



The Fast Track to SAP Knowledge

# Efficient Data Management with Near-Line Storage

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THE BEST-RUN BUSINESSES RUN SAP™





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## **AGENDA**

**Information Lifecycle Management**

**Near-Line Functionality**

**Enterprise Data Warehousing**

**Q & A**

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## **AGENDA**

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# What Companies are Facing Today...

Unprecedented growth in data –

- Driven by business growth - more transactions, more customers, more everything
- Driven by need to keep new types of data – IM files, RFID
- Driven by user demands – for more in-depth and on-demand analysis/reporting
- Driven by regulatory mandates - e.g. SOX, Basel II compliance
- Driven by reluctance to purge data – “just in case”

→ Data Warehouse Management is challenged to meet SLA obligations

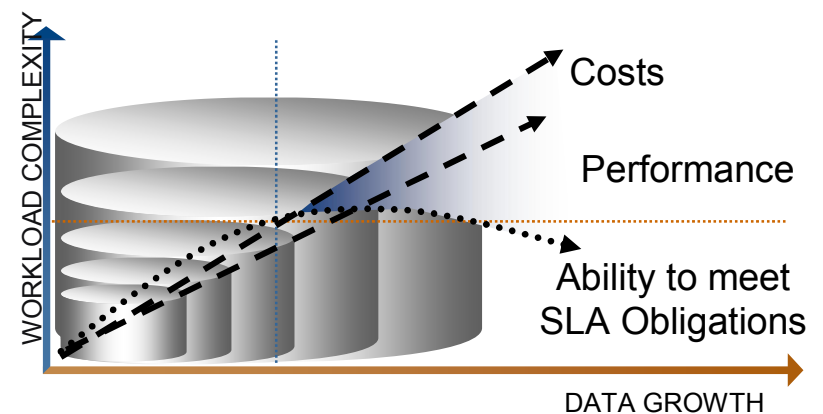
■ Traditional solution:

Either invest heavily in hardware and consulting, or exclude data from the warehouse

→ Compromising analytical requirements arising from increasingly complex business processes

→ Disturbing the decision-making process

→ Disregarding regulatory obligations



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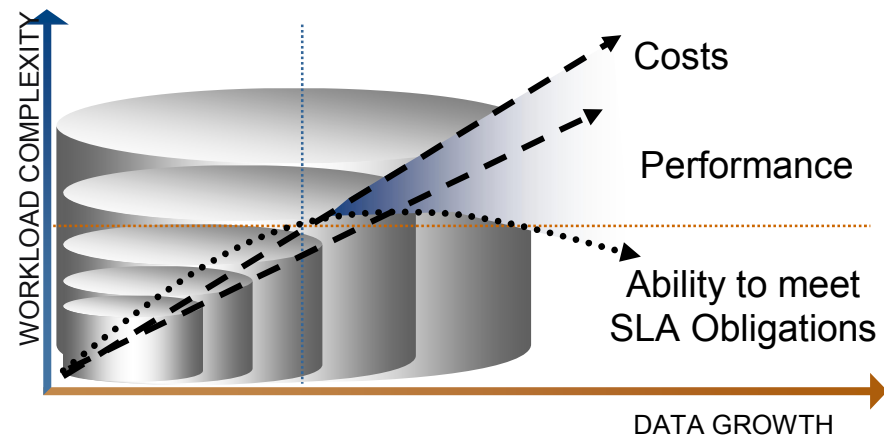
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## Why not Just Add More Storage ?

- Data volumes are in growing faster than the price/performance ratios of disk storage technology.
- Fast disks are still expensive
- Data stored in production environments requires failover and backup technology
- For every dollar a company spends on data storage devices, an estimated additional \$5 to \$10 is required to manage those devices over the lifetime of the equipment

➔ Total costs > \$ 150.000 per TB per year

More importantly, large volumes of data have adverse effects on system responsiveness, in areas such as:

- Data loading performance
- Performance of change runs, rollups, and so on
- Backup and recovery times
- Migration and upgrade times.

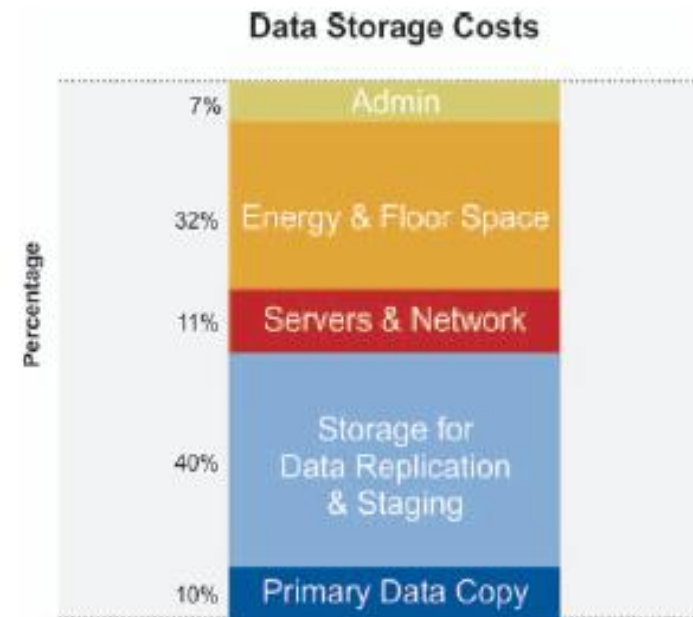


Figure 1: Breakdown of Data Storage Costs

# Data Aging Strategy



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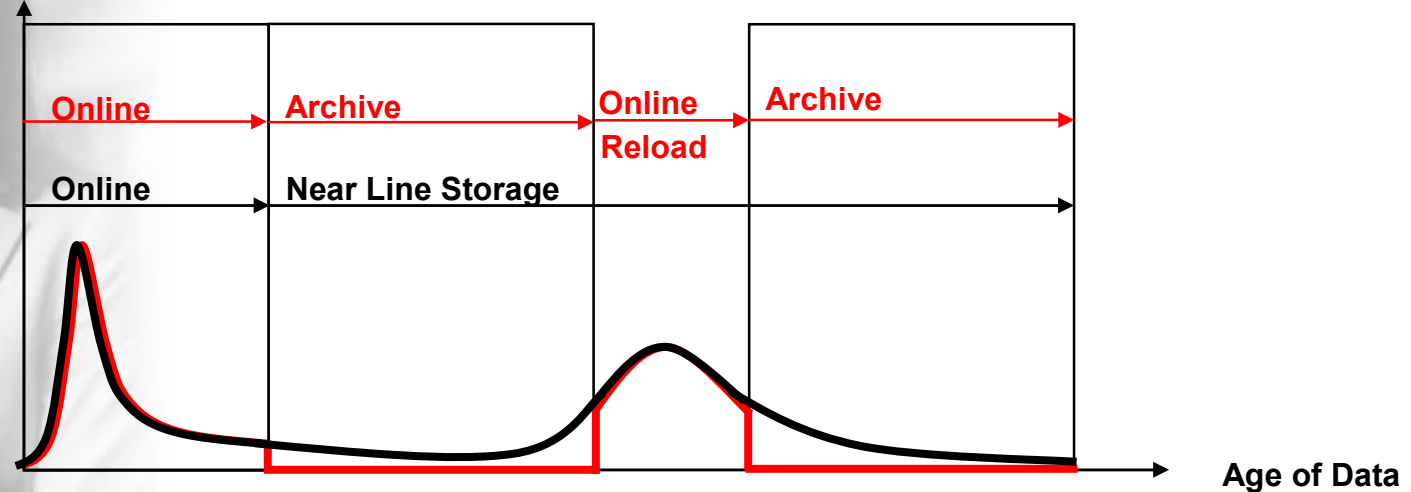
Information Life Cycle (ILM) architecture enables SAP BI Data Warehouse Managers to:

- Keep a “skinny”, responsive relational database within SAP BI
- Keep *all* their data accessible and usable over time
- Satisfy analytic and legal requirements
- Control their budget
- Ensure system availability according SLA obligations

	Online Database Storage	Near Line Storage	Data Archiving
Frequently read/updated data	✓		
Infrequently read data	✓	✓	
Very rarely read data	✓	✓	✓

# Classic Archiv vs. Near-Line

Access Frequency/Possibility



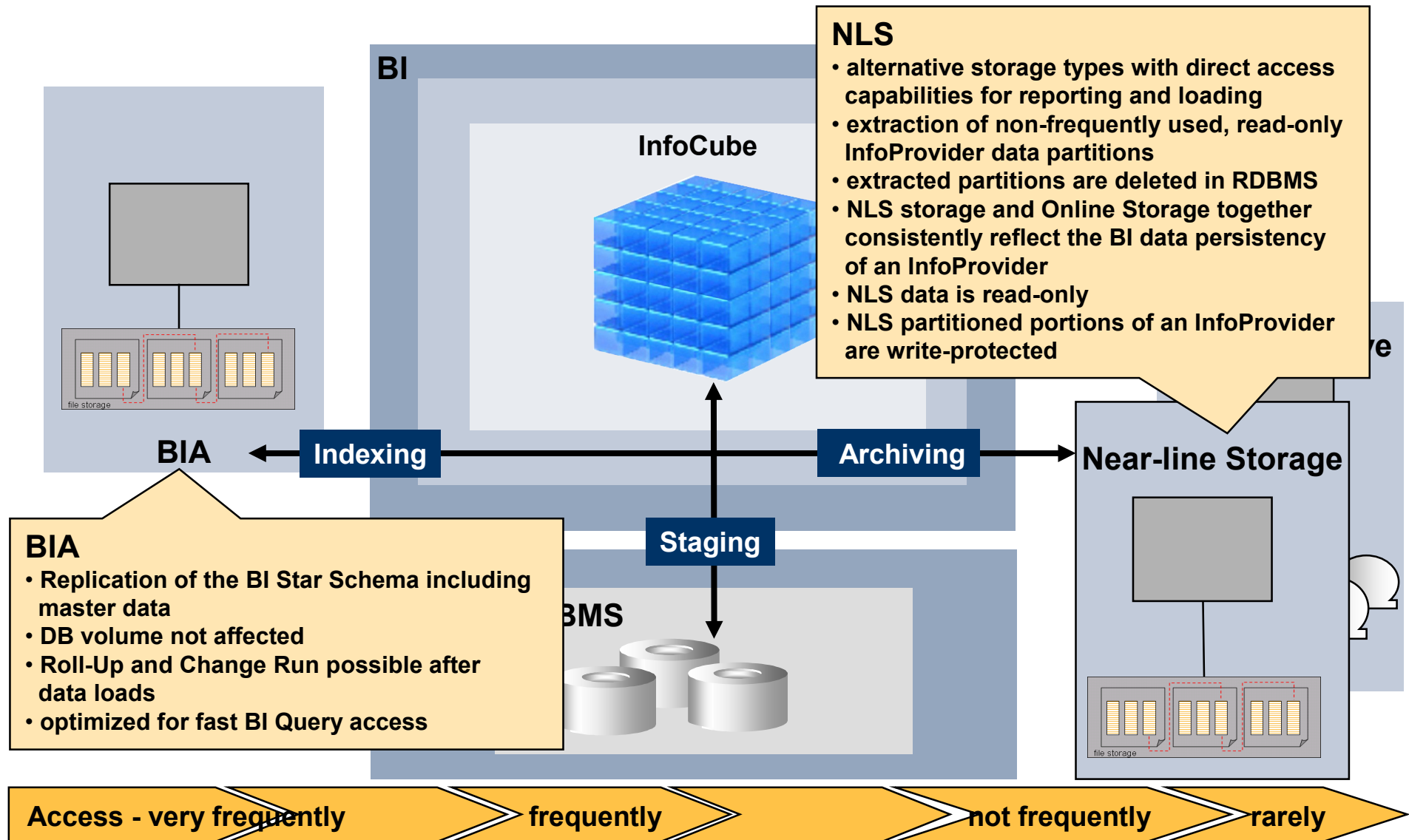
## Archiving (SAP BW 3.X)

- ADK-based (Archive Development Kit) archiving solution for InfoCubes and ODS objects
- Cost-reduction due to storing data on alternative storage media
- Archived data must be reloaded into the SAP NetWeaver BI database for analysis purposes

## NLS (SAP NW 2004s BI)

- SAP NetWeaver BI analyses have direct access to NLS data
- Availability of historic data while reducing costs
- Reloading of data into the InfoCube or DataStore Object only necessary in exceptional cases

# Near-line Storage vs. BI Accelerator



# Benefits of a Fundamental ILM Strategy for BI



## Increase Volume

- Manage and use even larger amounts of information more effectively
- Information available for any time frame for ad-hoc analyses and rebuilds

## Reduce Resource Consumption

- Reduction of hardware costs for hard drive hardware on the BW side
- Main memory and CPU as well as costs for system administration

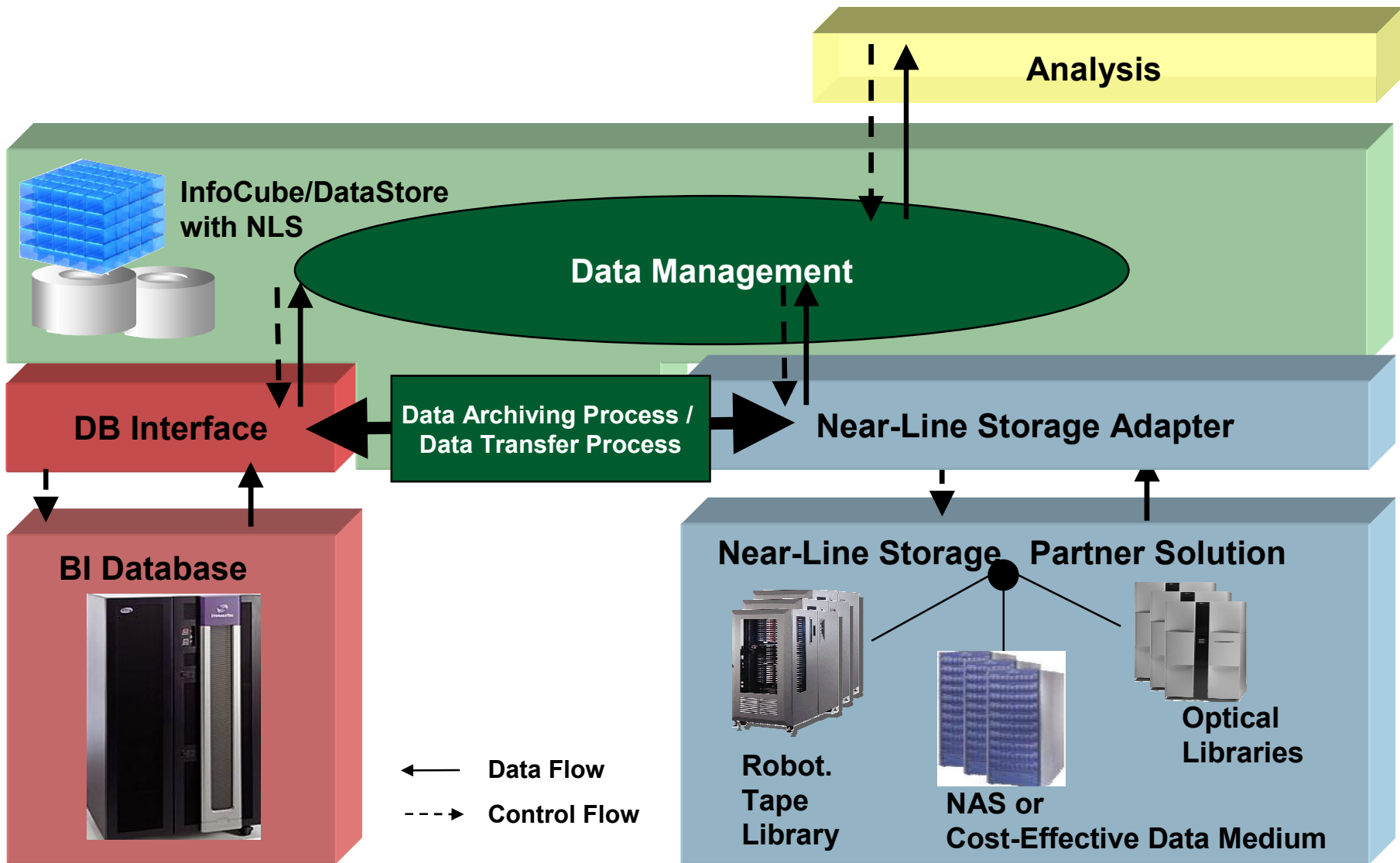
## Increase Availability

- Quicker, simpler software- and release management in BW
- Reduced backup- and recovery times
- Intelligent data access

## Optimize Performance

- Speed up loading processes in SAP NetWeaver BI
- SAP NetWeaver BI query response times in the dialog

# SAP NetWeaver 2004s BI – Generic NLS Interface

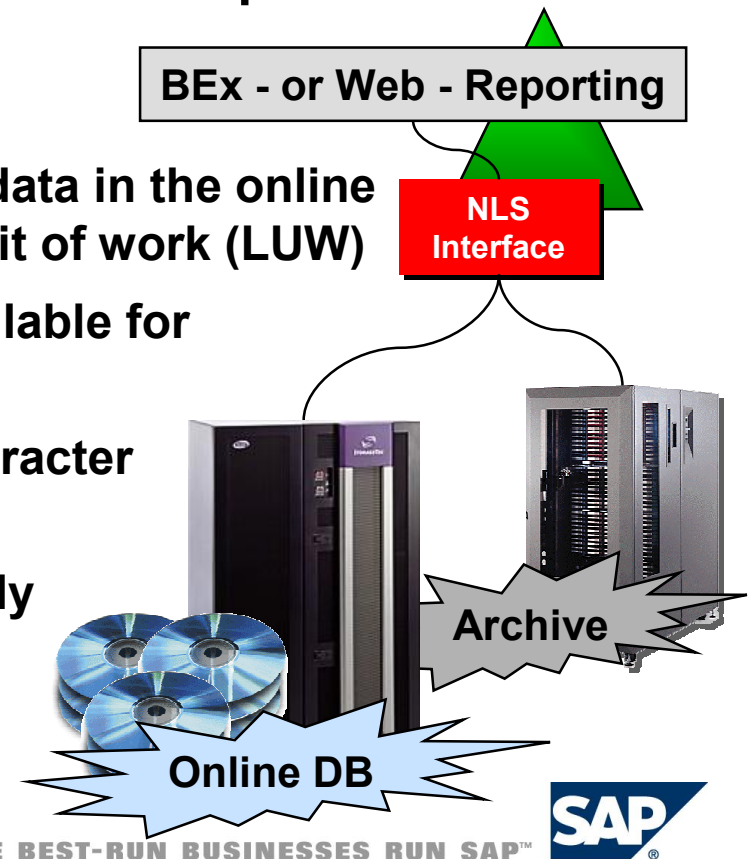


## Consistency between nearline and online

Analysis and Reporting operate on a combination of online- and near-line datasets. The consistency of the data is an absolute prerequisite.

Archiving processes into different near-line storage levels have to fulfill transactional requirements with regard to maintaining consistency

- Archiving and deletion of data in the online database form a logical unit of work (LUW)
- Rollback mechanisms available for individual archiving steps.
- The „archive“ gets the character of a database.
- The archive data are usually ‚read only‘



## SAND/DNA for SAP BI – what is it ?



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- Software-based solution, fully integrated into the SAP NetWeaver BI 2004s infrastructure
- Data compression of at least 85%, frequently as high as 95% (depending on the data)
- Database independent, no special hardware required
- Does not require index building, but still allows any data field to be accessed within Data Transfer Processes (DTP's), BEx or any SAP BI-certified front-end tool
- Runs on most popular operating systems (Tru64, Solaris, AIX, HP-UX, Linux, Windows)
- Can run on the same server as SAP BI, or on a different server
- Integrated with major archiving solutions to enable full Information Life Cycle Management like LiveLink from Opentext in accordance with SAP's recommended approach



## NLS Interface: Summary

- General aspects
- NLS fills the gap between online storage and offline storage with its data residing neither in the BI data base nor in a classic archive
- NLS data can be accessed directly for analyses and data load purposes (BI Queries, DTP's, DAP Reload Feature)
- NLS handling is provided for InfoCubes and DataStore Objects and processed using Data Archiving Processes (DAP)
- NLS storage and Online Storage together consistently reflect the BI data persistency of an InfoProvider
- NLS data is read-only
- NLS partitioned portions of an InfoProvider are write-protected
- Vendor specific aspects
- NLS data can be compressed
- NLS data can be indexed
- NLS data can reside on a separate database or file system



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## **AGENDA**

Information Lifecycle Management

**Near-Line Functionality**

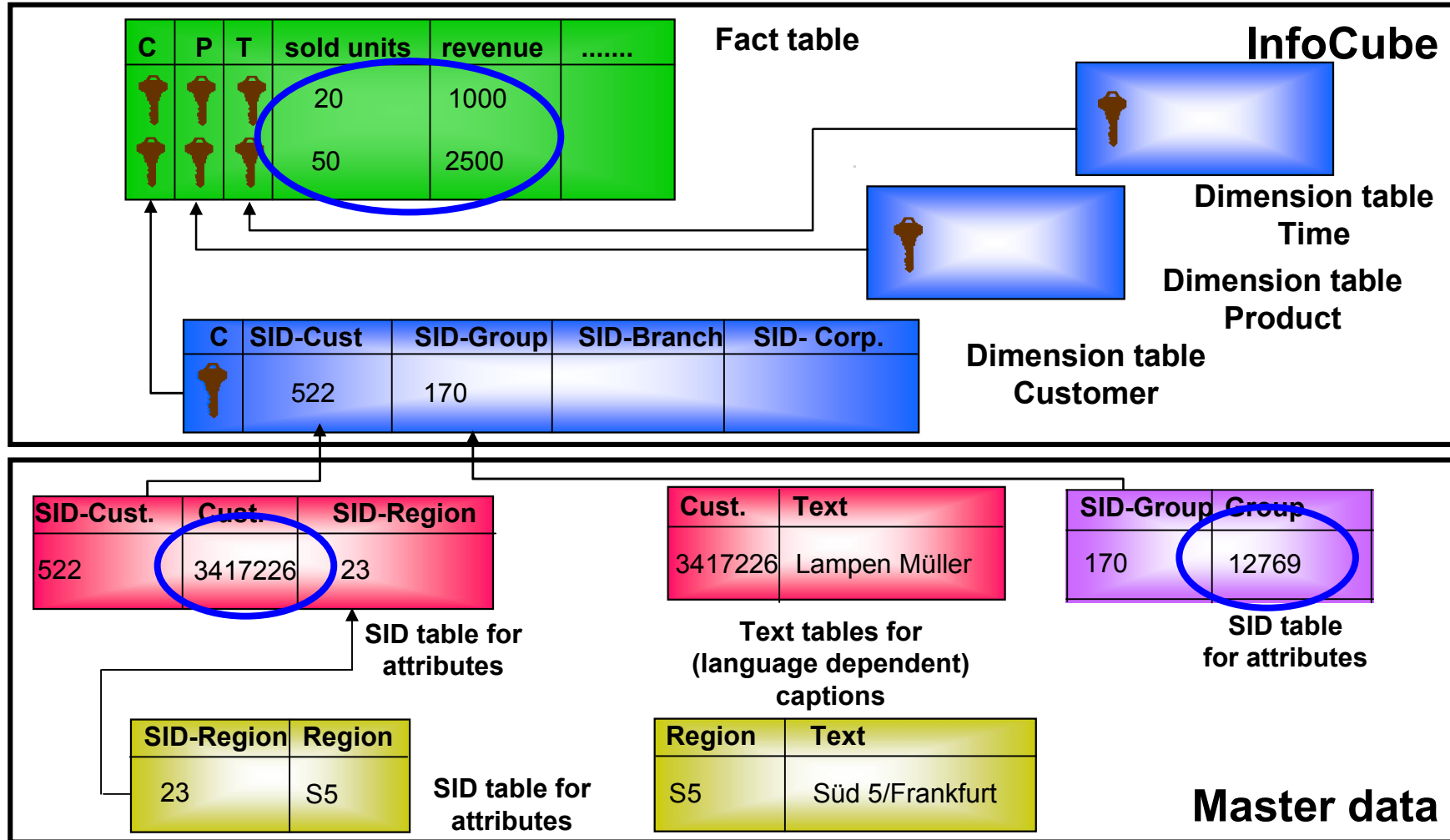
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# Near-Line Storage of BW Info-Cubes



# Compression of Info-Cubes



**F fact table  
without compression**

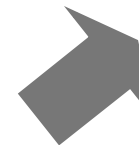
Request	Produkt	Periode	Umsatz
1	P1	2003-04	40
1	P2	2003-04	20
1	P3	2003-04	50
1	P4	2003-04	40
1	P5	2003-04	30
2	P1	2003-04	30
2	P2	2003-04	40
2	P3	2003-04	60
2	P4	2003-04	40
2	P5	2003-04	50
3	P1	2003-04	40
3	P2	2003-04	60
3	P3	2003-04	20
3	P4	2003-04	60
3	P5	2003-04	80

**E fact table**

Produkt	Periode	Umsatz
P1	2003-04	70
P2	2003-04	60
P3	2003-04	110
P4	2003-04	80
P5	2003-04	80

**F fact table**

Request	Produkt	Periode	Umsatz
3	P1	2003-04	40
3	P2	2003-04	60
3	P3	2003-04	20
3	P4	2003-04	60
3	P5	2003-04	80



**compression of all  
Requests up to Request 2**

# Tutorial Example Cube(s) ZEDUnnl

System Help

**Data Model for InfoCube ZEDU011**

Modeling

- InfoProvider
- InfoObjects
- InfoSources
- DataSources
- Source Systems
- Open Hub Desti
- Find
- Favorites

Administration

Transport Connectio

Documents

BI Content

Translation

Metadata Repository

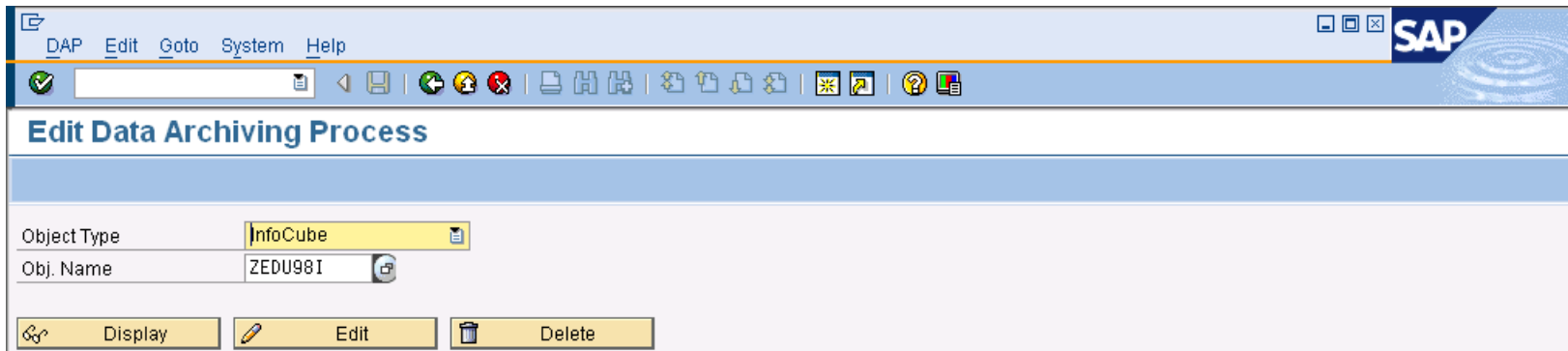
InfoCube data model

Techn.name	
01 IC Education	ZEDU011
Organization	ZEDU0111
Sales Organization (SAP Demo)	0D_SALE_ORG
Company Code (SAP Demo)	0D_CO_CODE
Distribution Channel (SAP Demo)	0D_DIS_CHAN
Division (SAP Demo)	0D_DIV
Customer	ZEDU0112
Sales Employee	ZEDU0113
Version	ZEDU0114
Product	ZEDU0115
Product hierarchy (SAP Demo)	0D_PROD_HIE
Material (SAP Demo)	0D_MATERIAL
Time	ZEDU011T
Calendar Year	0CALYEAR
Calendar Year/Quarter	0CALQUARTER
Calendar Year/Month	0CALMONTH
Calendar Day	0CALDAY
Data Package	ZEDU011P
Unit	ZEDU011U
Key figures	1KYFNM
Net value of the invoice item in the docC	0D_NETVLIN
Billed Quantity (SAP Demo)	0D_INV_QTY
Costs in Document currency (SAP Demo)	0D_COST
Tax amount in document currency (SAP	0D_TAXAMOUN
Navigation attributes	1ATTRIBUTE

**"ZEDU98I", List output**

0CALYEAR	0DOC_CURRC	Sales unit	0D_COST	0D_INV_QTY	0D_NETVLIN	Tax Amount
1990	EUR	ST	868.600,00	10.890	13.274.550,63	1.657.821,00
1991	USD	ST	870.921,00	11.284	13.309.481,64	1.662.752,00
1992	EUR	ST	870.994,00	11.648	13.309.845,64	1.663.116,00
1993	EUR	ST	870.970,00	12.012	13.310.209,64	1.663.480,00
1994	EUR	ST	871.043,00	12.376	13.310.573,64	1.663.844,00
1995	EUR	ST	871.019,00	12.740	13.310.937,64	1.664.208,00
1996	EUR	ST	870.995,00	13.104	13.311.301,64	1.664.572,00
1997	EUR	ST	870.971,00	13.468	13.311.665,64	1.664.936,00
1998	EUR	ST	868.578,00	13.794	13.273.461,63	1.660.725,00
1999	EUR	ST	868.553,00	14.157	13.273.824,63	1.661.088,00
2000	EUR	ST	868.528,00	14.520	13.274.187,63	1.661.451,00

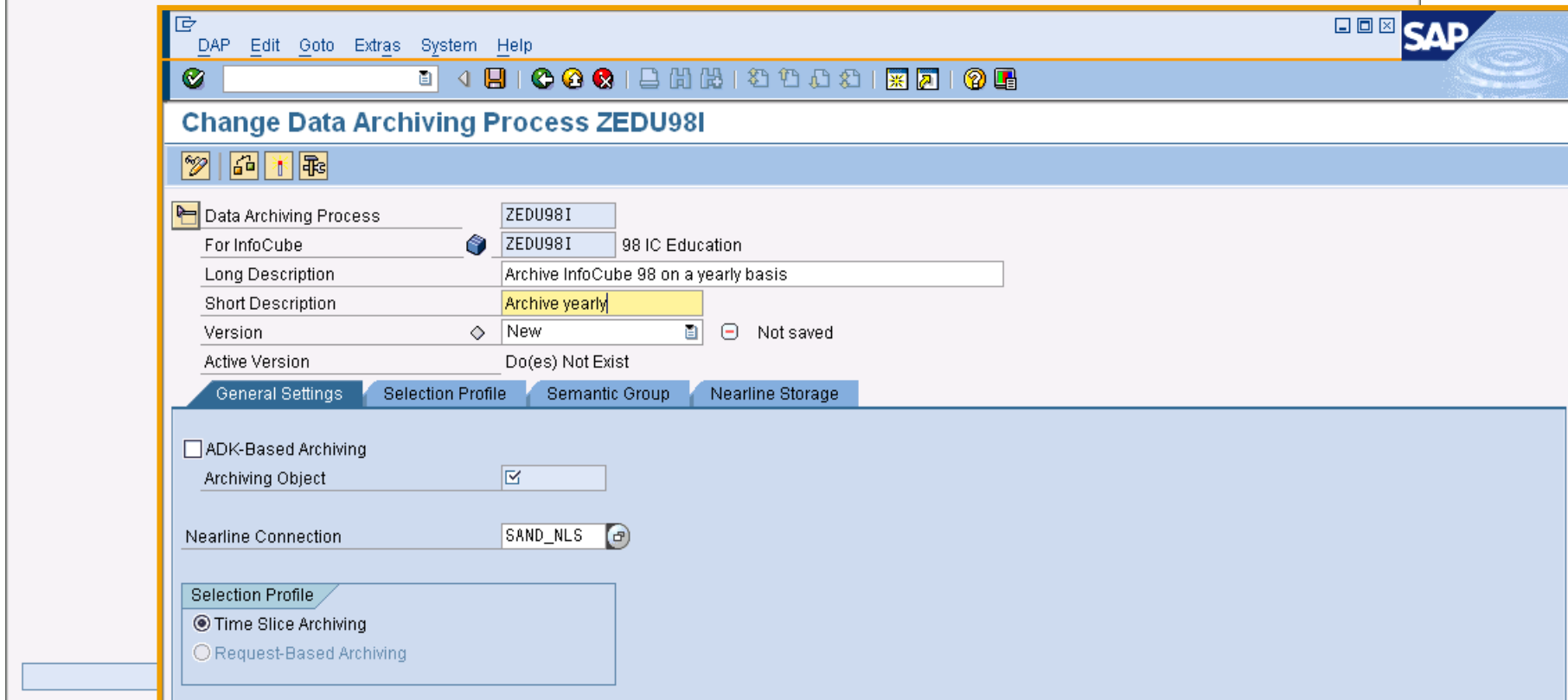
# Defining a Data Archiving Process (RSDAP)



This screenshot shows the 'Edit Data Archiving Process' dialog in SAP. The 'Object Type' is set to 'InfoCube' and the 'Obj. Name' is 'ZEDU981'. Below the input fields are three buttons: 'Display', 'Edit', and 'Delete'.

Object Type: InfoCube  
Obj. Name: ZEDU981

Buttons: Display, Edit, Delete



This screenshot shows the 'Change Data Archiving Process ZEDU981' dialog. It displays various settings for the archiving process, including the object name, description, version, and archiving options.

Data Archiving Process: ZEDU981  
For InfoCube: ZEDU981 98 IC Education  
Long Description: Archive InfoCube 98 on a yearly basis  
Short Description: Archive yearly  
Version: New (Not saved)  
Active Version: Do(es) Not Exist

General Settings | Selection Profile | Semantic Group | Nearline Storage

ADK-Based Archiving  
Archiving Object:

Nearline Connection: SAND\_NLS

Selection Profile  
 Time Slice Archiving  
 Request-Based Archiving

# Specifying the Selection Criteria

SAP

Change Data Archiving Process ZEDU98I

Data Archiving Process: ZEDU98I  
 For InfoCube: ZEDU98I 98 IC Education  
 Long Description: Archive InfoCube 98 on a yearly basis  
 Short Description: Archive yearly  
 Version: New (Not saved)  
 Active Version: Do(es) Not Exist

General Settings | Selection Profile | Semantic Group | Nearline Storage

Characteristic for Time Slice: 0CALMONTH Calendar Year/Month  
 Partitioning Characteristic: 0CALMONTH Calendar Year/Month

Additional Partitioning Characteristics

Lckd	InfoObject	K.	Short Description
	0D_CO_CODE	<input checked="" type="checkbox"/>	Company code

InfoObject	Pos.	K.	Short Description
0CALDAY	4	<input checked="" type="checkbox"/>	Calendar Day
0CALMONTH	5	<input checked="" type="checkbox"/>	Calendar Year/Month
0CALQUARTE	6	<input checked="" type="checkbox"/>	Cal. Year/Quarter
0CALYEAR	7	<input checked="" type="checkbox"/>	Calendar Year
0D_DIS_CHAN	9	<input checked="" type="checkbox"/>	Distribution channel
0D_DIV	10	<input checked="" type="checkbox"/>	Division

DA3 (2) 002 SAND101 INS

# Creating New Archive Requests via Workbench

The screenshot displays the SAP InfoProvider Administration Workbench interface. The top menu bar includes 'General', 'Edit', 'Goto', 'Environment', 'System', and 'Help'. The main window title is 'InfoProvider Administration'. Below the title bar, there are navigation icons and buttons for 'Contents' and 'Application Log'. On the left side, a 'Modeling' sidebar lists various components: InfoProvider (selected), InfoObjects, InfoSources, DataSources, Source Systems, Open Hub Desti, Find, and Favorites. Below the sidebar are buttons for 'Administration', 'Transport Connectio', 'Documents', 'BI Content', 'Translation', and 'Metadata Repository'. The main area is titled 'Selectable Data Targets for Administration' and contains a table with the following data:

Name	D...	Technical Name	Table Type
98 IC Education		ZEDU98I	InfoCube

Below the table, there are tabs for 'Contents', 'Performance', 'Requests', 'Rollup', 'Collapse', 'Reconstruction', and 'Archiving'. The 'Archiving' tab is active, showing a toolbar with various icons and a table with the following columns: Request SID, Req Ty..., Lock St., Copy St., Ver. St., Del. St., Status, Created on, Created At, Selection Condition, Sessn, NL Request, and Dat. Pa. At the bottom of the Archiving tab, there are buttons for 'Refresh' and 'Archiving Request...'. An orange arrow points to the 'Archiving Request...' button. The status bar at the bottom right shows 'DA3 (1) 002', 'SAND101', and 'INS'.

# Relative Time Calculation

The screenshot displays the SAP interface for data archiving. The main window title is "GPDWPSOQ8WARDABZHL4YNFOEKNW". It features two tabs: "Relative Time Restrictions" (active) and "Further Restrictions".

**Relative Time Restrictions:**

- Only Data Records Older Than: 16 Year(s)
- Only Complete: Year(s)
- Calendar Year/Month: 12. 1990 to

**Process Flow Control:**

- Execute to Target Status: Request Generated
- Test Mode:
- Production Mode:

A "Log Display" window is open in the foreground, showing the following messages:

Ty...	Message Text
■	Generating new archiving request for data archiving process ZEDU981...
■	Processing in production mode
■	User ZEDU981 is authorized to archive InfoProvider
■	Processing finished successfully after reaching target status '10'

The status bar at the bottom of the main window shows: DA3 (1) 002 SAND101 INS

# Archiving Tab in Administration Screen

The screenshot displays the SAP InfoProvider Administration interface. The top menu bar includes 'General', 'Edit', 'Goto', 'Environment', 'System', and 'Help'. The main title is 'InfoProvider Administration'. Below the title, there are navigation buttons for 'Contents' and 'Application Log'. A left-hand navigation pane shows a tree structure under 'Modeling', with 'InfoProvider' selected. The main area is titled 'Selectable Data Targets for Administration' and contains a table with the following data:

Name	D...	Technical Name	Table Type
98 IC Education		ZEDU98I	InfoCube

Below this table, there are tabs for 'Contents', 'Performance', 'Requests', 'Rollup', 'Collapse', 'Reconstruction', and 'Archiving'. The 'Archiving' tab is active, showing a table with the following data:

Request SID	Req Ty...	Lock St.	Copy St.	Ver. St.	Del. St.	Status	Created on	Created At	Selection Condition	Sessn	NL Request
147							31.07.2007	22:02:19	CALMONTH <= '199012'		0

At the bottom of the 'Archiving' tab, there are buttons for 'Refresh' and 'Archiving Request...'. The status bar at the bottom right shows 'DA3 (1) 002', 'SAND101', and 'INS'.



# Request Meta Data

General Edit Goto Environment System Help

InfoProvider Administration

Contents Application Log

Modeling

- InfoProvider
- InfoObjects
- InfoSources
- DataSources
- Source Systems
- Open Hub Desti
- Find
- Favorites

Selectable Data Targets for Administration

Name	D...	Technical Name	Table Type
98 IC Education		ZEDU98I	InfoCube

Contents Performance Requests Rollup Collapse Reconstruction Archiving

Request SID	Req Ty...	Lock St.	Copy St.	Ver. St.	Del. St.	Status	Created on	Created At	Selection Condition	Sessn	NL Request
147							31.07.2007	22:02:19	CALMONTH <= '199012'		148

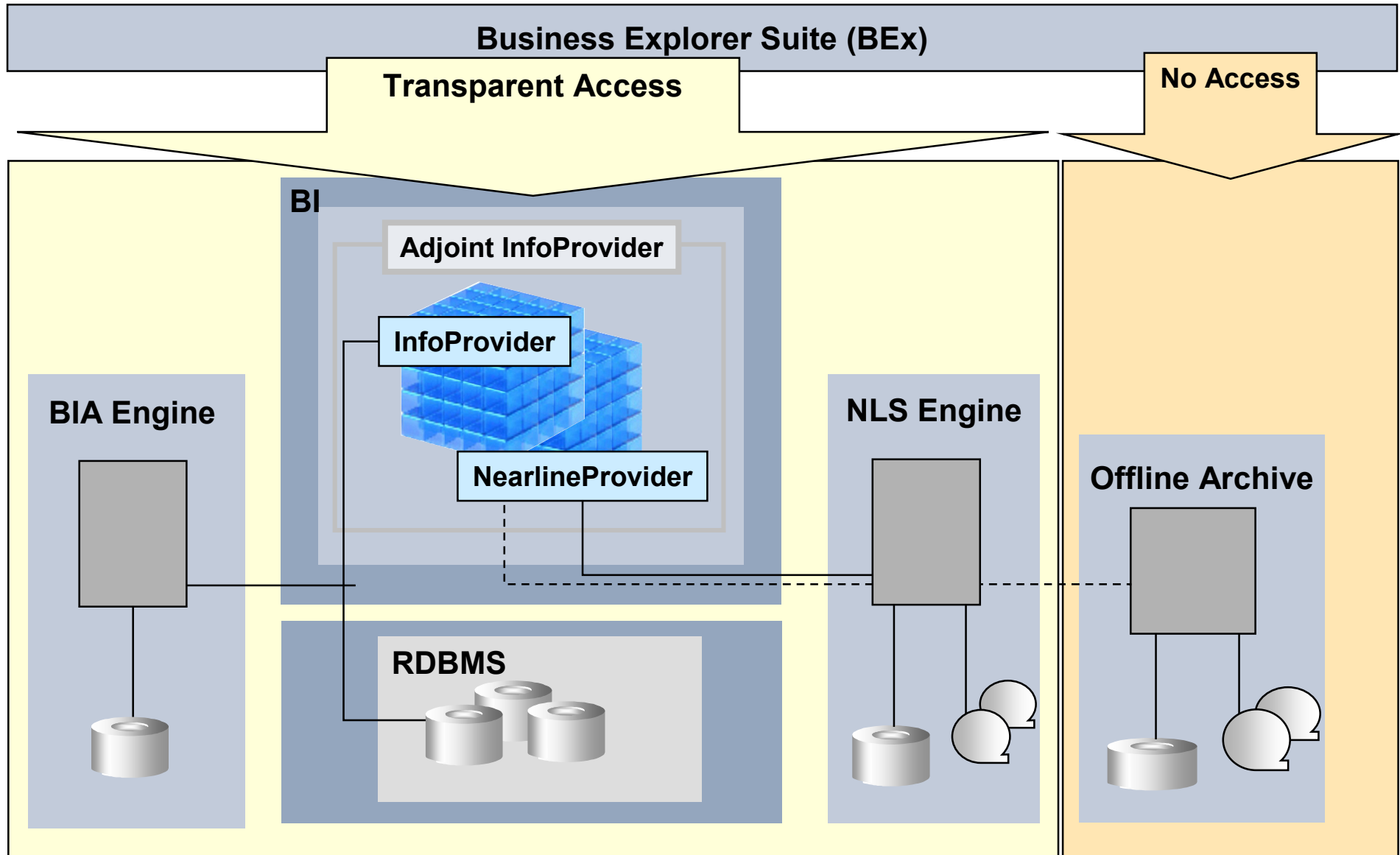
Request SID	NL Request	Dat. Pack.	Number of Data Records	Total Size in kBytes	Archiving Request
147	148	1	363	126,324	ARCH_86ZLV6DWN48XJKY6JF0PAI7F

Administration Transport Connectio Documents BI Content Translation Metadata Repository

Refresh Archiving Request...

DA3 (1) 002 SAND101 INS

# Reporting Aspects (Adjoint Provider)



# Listcube of Adjoint Near-Line Provider

"ZEDU98I", List output

0CALYEAR	0DOC_CURRC	Sales unit	0D_COST	0D_INV_QTY	0D_NETVLIN	Tax Amount
1991	USD	ST	870.921,00	11.284	13.309.481,64	1.662.752,00
1992	EUR	ST	870.994,00	11.648	13.309.845,64	1.663.116,00
1993	EUR	ST	870.970,00	12.012	13.310.209,64	1.663.480,00
1994	EUR	ST	871.043,00	12.376	13.310.573,64	1.663.844,00
1995	EUR	ST	871.019,00	12.740	13.310.937,64	1.664.208,00
1996	EUR	ST	870.995,00	13.104	13.311.301,64	1.664.572,00
1997	EUR	ST	870.971,00	13.468	13.311.665,64	1.664.936,00
1998	EUR	ST	868.578,00	13.794	13.273.461,63	1.660.725,00
1999	EUR	ST	868.553,00	14.157	13.273.824,63	1.661.088,00
2000	EUR	ST	868.528,00	14.520	13.274.187,63	1.661.451,00

"ZEDU98I\$N", List output

0CALMONTH	0DOC_CURRC	Sales unit	0D_COST	0D_INV_QTY	0D_NETVLIN	Tax Amount
01.1990	EUR	ST	71.784,00	900	1.098.390,30	137.010,00
02.1990	EUR	ST	71.842,00	900	1.098.060,30	137.010,00
03.1990	EUR	ST	71.803,00	900	1.097.730,30	137.010,00
04.1990	EUR	ST	71.764,00	900	1.097.400,30	137.010,00
05.1990	EUR	ST	71.822,00	900	1.097.070,30	137.010,00
06.1990	EUR	ST	71.783,00	900	1.096.740,30	137.010,00
07.1990	EUR	ST	71.744,00	900	1.096.410,30	137.010,00
08.1990	EUR	ST	71.802,00	900	1.096.080,30	137.010,00
09.1990	EUR	ST	71.860,00	900	1.095.750,30	137.010,00
10.1990	EUR	ST	74.085,00	930	1.133.980,31	141.577,00
11.1990	EUR	ST	74.132,00	930	1.133.639,31	141.577,00
12.1990	EUR	ST	74.179,00	930	1.133.298,31	141.577,00

# Parallel Archive in Process Chain

The screenshot displays the SAP Process Chain Maintenance interface for 'Archive InfoCube ZEDU98I'. The process chain is a parallel structure starting with 'Start' and 'PC98 Start Immediate', which branches into four parallel 'Archiving Process' steps:

- Archiving Process: Archive ZEDU98I Company Code 1000
- Archiving Process: Archive ZEDU98I Company Code 2000
- Archiving Process: Archive ZEDU98I Company Code 3000
- Archiving Process: Archive ZEDU98I Company Code 4000

Two pop-up windows are overlaid on the interface:

- Create Variant for Data Archiving Process:**
  - Process Variants: ZEDU98I\_CC1000
  - Long description: Archive ZEDU98I Company Code 1000
  - Data Archiving Process: ZEDU98I
- Insert Archive Data from an InfoProvider:**
  - Archiving Process: ZEDU98I\_CC1000
  - Description: Archive ZEDU98I Company Code 1000





At the bottom of the interface, a status bar indicates: 'Version 'M' of chain ZPC\_ZEDU98I was saved without checking'.

# Relative Time Calculation

Variant Edit Goto System Help


SAP

## Edit Variant for Data Archiving Process

    DAP


Process Variant: ZEDU98I\_CC1000    Archive ZEDU98I Company Code 1000

Last Changed By:    On:    At: 00:00:00

Data Archiving Process: ZEDU98I 


**Process Flow Control**


Continue Open Archiving Request(s)


Terminate Process If Status Is: Verification Ended Successfully 

**Selection Conditions**

**Relative Time Restrictions**    Further Restrictions

Only Data Records Older Than: 15 Year(s) 

Only Complete: Year(s) 

Calendar Year/Month: 12.1991    to:    

DA3 (3) 002    SAND101    INS

# Restricting the Archiving Request to COMPCODE 1000

The screenshot shows the SAP 'Edit Variant for Data Archiving Process' dialog box. The window title is 'Edit Variant for Data Archiving Process'. The process variant is 'ZEDU98I\_CC1000' and the description is 'Archive ZEDU98I Company Code 1000'. The 'Data Archiving Process' is 'ZEDU98I'. The 'Process Flow Control' section has 'Continue Open Archiving Request(s)' unchecked and 'Terminate Process If Status Is' set to 'Verification Ended Successfully'. The 'Selection Conditions' section has two tabs: 'Relative Time Restrictions' and 'Further Restrictions'. The 'Further Restrictions' tab is active, showing a restriction on 'Company code' to '1000'. The status bar at the bottom right shows 'DA3 (3) 002 SAND101 INS'.

Process Variant	ZEDU98I_CC1000	Archive ZEDU98I Company Code 1000
Last Changed By		On At 00:00:00
Data Archiving Process	ZEDU98I	

**Process Flow Control**

Continue Open Archiving Request(s)

Terminate Process If Status Is: Verification Ended Successfully

**Selection Conditions**

**Further Restrictions**

Company code	1000	to	
--------------	------	----	--

DA3 (3) 002 SAND101 INS

# Parallel Execution of Archiving Requests

General Edit Goto Environment System Help

InfoProvider Administration

Contents Application Log

Modeling

- InfoProvider
- InfoObjects
- InfoSources
- DataSources
- Source Systems
- Open Hub Desti
- Find
- Favorites

Administration

Transport Connectio

Documents

BI Content

Translation

Metadata Repository

Selectable Data Targets for Administration

Name	D...	Technical Name	Table Type
98 IC Education		ZEDU98I	InfoCube

Contents Performance Requests Rollup Collapse Reconstruction Archiving

Request SID	Copy St.	Ver. St.	Del. St.	Status	Created on	Created At	Selection Condition
243	○○○			○○○	02.08.2007	11:18:06	CALMONTH BETWEEN '199101' AND '199112' AND D_CO_CODE = '4000'
242	○○○			○○○	02.08.2007	11:18:05	CALMONTH BETWEEN '199101' AND '199112' AND D_CO_CODE = '3000'
241	○○○			○○○	02.08.2007	11:18:04	CALMONTH BETWEEN '199101' AND '199112' AND D_CO_CODE = '2000'
240	○○○			○○○	02.08.2007	11:18:00	CALMONTH BETWEEN '199101' AND '199112' AND D_CO_CODE = '1000'
147	○○○	○○○	○○○	○○○	31.07.2007	22:02:19	CALMONTH <= '199012'

Refresh Archiving Request...

DA3 (2) 002 SAND101 INS

# Request Status after Process Chain Execution

General Edit Goto Environment System Help

InfoProvider Administration

Contents Application Log

Modeling

- InfoProvider
- InfoObjects
- InfoSources
- DataSources
- Source Systems
- Open Hub Desti
- Find
- Favorites

Administration

Transport Connectio

Documents

BI Content

Translation

Metadata Repository

Selectable Data Targets for Administration

Name	D...	Technical Name	Table Type
98 IC Education		ZEDU98I	InfoCube

Contents Performance Requests Rollup Collapse Reconstruction Archiving

Request SID	Req Ty...	Lock St.	Copy St.	Ver. St.	Del. St.	Status	Created on	Created At	Selection Condition
243							02.08.2007	11:18:06	CALMONTH BETWEEN '199101' AND '199112' AND D_C
242							02.08.2007	11:18:05	CALMONTH BETWEEN '199101' AND '199112' AND D_C
241							02.08.2007	11:18:04	CALMONTH BETWEEN '199101' AND '199112' AND D_C
240							02.08.2007	11:18:00	CALMONTH BETWEEN '199101' AND '199112' AND D_C
147							31.07.2007	22:02:19	CALMONTH <= '199012'

Refresh Archiving Request...

DA3 (1) 002 SAND101 INS

# Merged Deletion Process

Process Chain Maintenance Modified Version: Delete archived data of ZE

The screenshot displays the SAP Process Chain Maintenance interface. The main window shows a process flow diagram with the following steps:

```

    graph TD
      Start[Start] --> Archiving[Archiving Process]
      Archiving --> Deletion[Delete archived data (continue requests)]
  
```

The 'Edit Variant for Data Archiving Process' dialog box is open, showing the following configuration:

Process Variant	ZEDU981_DELETE	Delete archived data (continue requests)
Last Changed By		On At 00:00:00
Data Archiving Process	ZEDU981	
<b>Process Flow Control</b>		
<input checked="" type="checkbox"/> Continue Open Archiving Request(s)		
Terminate Process If Status Is	No Suspension	

Chain ZPC\_ZEDU981\_D was saved as active

DA3 (2) 002 SAND101 INS

# Deletion Phase started parallel → one Delete Job

The screenshot shows the SAP InfoProvider Administration interface. The top menu includes General, Edit, Goto, Environment, System, and Help. The main title is "InfoProvider Administration". Below the title, there are navigation buttons for Contents and Application Log. The interface is divided into several sections:

- Modeling:** A sidebar on the left with options like InfoProvider, InfoObjects, InfoSources, DataSources, Source Systems, Open Hub Desti, Find, and Favorites.
- Selectable Data Targets for Administration:** A table with columns: Name, D., Technical Name, and Table Type. It contains one entry: "98 IC Education" with Technical Name "ZEDU98I" and Table Type "InfoCube".
- Archiving:** A tabbed interface with options: Contents, Performance, Requests, Rollup, Collapse, Reconstruction, and Archiving. The "Requests" tab is active.
- Requests Table:** A table with columns: Request SID, Req Ty., Lock St., Copy St., Ver. St., Del. St., Status, Created on, Created At, and Selection Condition. It lists several requests, with Request SID 243 highlighted.
- Navigation and Controls:** Includes a search bar, a "Refresh" button, and an "Archiving Request..." button.

The status bar at the bottom right shows "DA3 (1) 002 SAND101 INS".

# Final Status after Complete Archiving Requests Execution

General Edit Goto Environment System Help

InfoProvider Administration

Contents Application Log

Selectable Data Targets for Administration

Name	D...	Technical Name	Table Type
98 IC Education		ZEDU98I	InfoCube

Modeling

- InfoProvider
- InfoObjects
- InfoSources
- DataSources
- Source Systems
- Open Hub Desti
- Find
- Favorites

Administration

Transport Connectio

Documents

BI Content

Translation

Metadata Repository

Contents Performance Requests Rollup Collapse Reconstruction Archiving

Request SID	Req Ty...	Lock St.	Copy St.	Ver. St.	Del. St.	Status	Created on	Created At	Selection Condition
243							02.08.2007	11:18:06	CALMONTH BETWEEN '199101' AND '199112' AND D_C
242							02.08.2007	11:18:05	CALMONTH BETWEEN '199101' AND '199112' AND D_C
241							02.08.2007	11:18:04	CALMONTH BETWEEN '199101' AND '199112' AND D_C
240							02.08.2007	11:18:00	CALMONTH BETWEEN '199101' AND '199112' AND D_C
147							31.07.2007	22:02:19	CALMONTH <= '199012'

Refresh Archiving Request...

DA3 (1) 002 SAND101 INS

# Reloading Requests

The screenshot displays the SAP InfoProvider Administration interface. The main window shows a table of 'Selectable Data Targets for Administration' with one entry: '98 IC Education' (Technical Name: ZEDU981, Table Type: InfoCube). Below this, a 'Requests' tab is active, showing a list of requests. An orange arrow points to request 243, which is highlighted. A detailed view of request 243 is shown in a pop-up window, indicating it is an 'Archiving Request' that has 'Archiving Ended Successfully'. The 'Action' menu is open, and the 'Reload' option is selected.

Request SID	Req Ty...	Lock St.	Copy St.	Ver. St.	Del. St.	Status	Dated on	Created At	Selection Condition
243							02.08.2007	11:18:06	CALMONTH BETWEEN '199101' AND '199112' AND D_C
242							02.08.2007	11:18:05	CALMONTH BETWEEN '199101' AND '199112' AND D_C
241									
240									
147									

**Request Details (Request 243):**

- Data Archiving Process: ZEDU981 (Archive InfoCube 98 on a yearly basis)
- Request: 243
- Request Type: ARCH (Archiving Request)
- Current Request Status: Archiving Ended Successfully
- Action:  Reload
- Job Name: BI\_ARCH

# Reload is a Logical Unit of Work

General Edit Goto Environment System Help

InfoProvider Administration

Contents Application Log

Modeling

- InfoProvider
- InfoObjects
- InfoSources
- DataSources
- Source Systems
- Open Hub Desti
- Find
- Favorites

Administration

Transport Connectio

Documents

BI Content

Translation

Metadata Repository

Selectable Data Targets for Administration

Name	D...	Technical Name	Table Type
98 IC Education		ZEDU98I	InfoCube

Contents Performance Requests Rollup Collapse Reconstruction Archiving

Request SID	Req Ty...	Lock St.	Copy St.	Ver. St.	Del. St.	Status	Created on	Created At	Selection Condition
250							02.08.2007	15:09:34	CALMONTH BETWEEN '199101' AND '199112' AND D_C
243							02.08.2007	11:18:06	CALMONTH BETWEEN '199101' AND '199112' AND D_C
242							02.08.2007	11:18:05	CALMONTH BETWEEN '199101' AND '199112' AND D_C
241							02.08.2007	11:18:04	CALMONTH BETWEEN '199101' AND '199112' AND D_C
240							02.08.2007	11:18:00	CALMONTH BETWEEN '199101' AND '199112' AND D_C
147							31.07.2007	22:02:19	CALMONTH <= '199012'

Refresh Archiving Request...

DA3 (1) 002 SAND101 INS

# Request Status after Reload

General Edit Goto Environment System Help

InfoProvider Administration

Modeling

- InfoProvider
- InfoObjects
- InfoSources
- DataSources
- Source Systems
- Open Hub Desti
- Find
- Favorites

Administration

- Transport Connectio
- Documents
- BI Content
- Translation
- Metadata Repository

Selectable Data Targets for Administration

Name	D...	Technical Name	Table Type
98 IC Education		ZEDU98I	InfoCube

Contents Performance Requests Rollup Collapse Reconstruction Archiving

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242							02.08.2007	11:18:05	CALMONTH BETWEEN '199101' AND '199112' AND D_C
241							02.08.2007	11:18:04	CALMONTH BETWEEN '199101' AND '199112' AND D_C
240							02.08.2007	11:18:00	CALMONTH BETWEEN '199101' AND '199112' AND D_C
147							31.07.2007	22:02:19	CALMONTH <= '199012'

Refresh Archiving Request

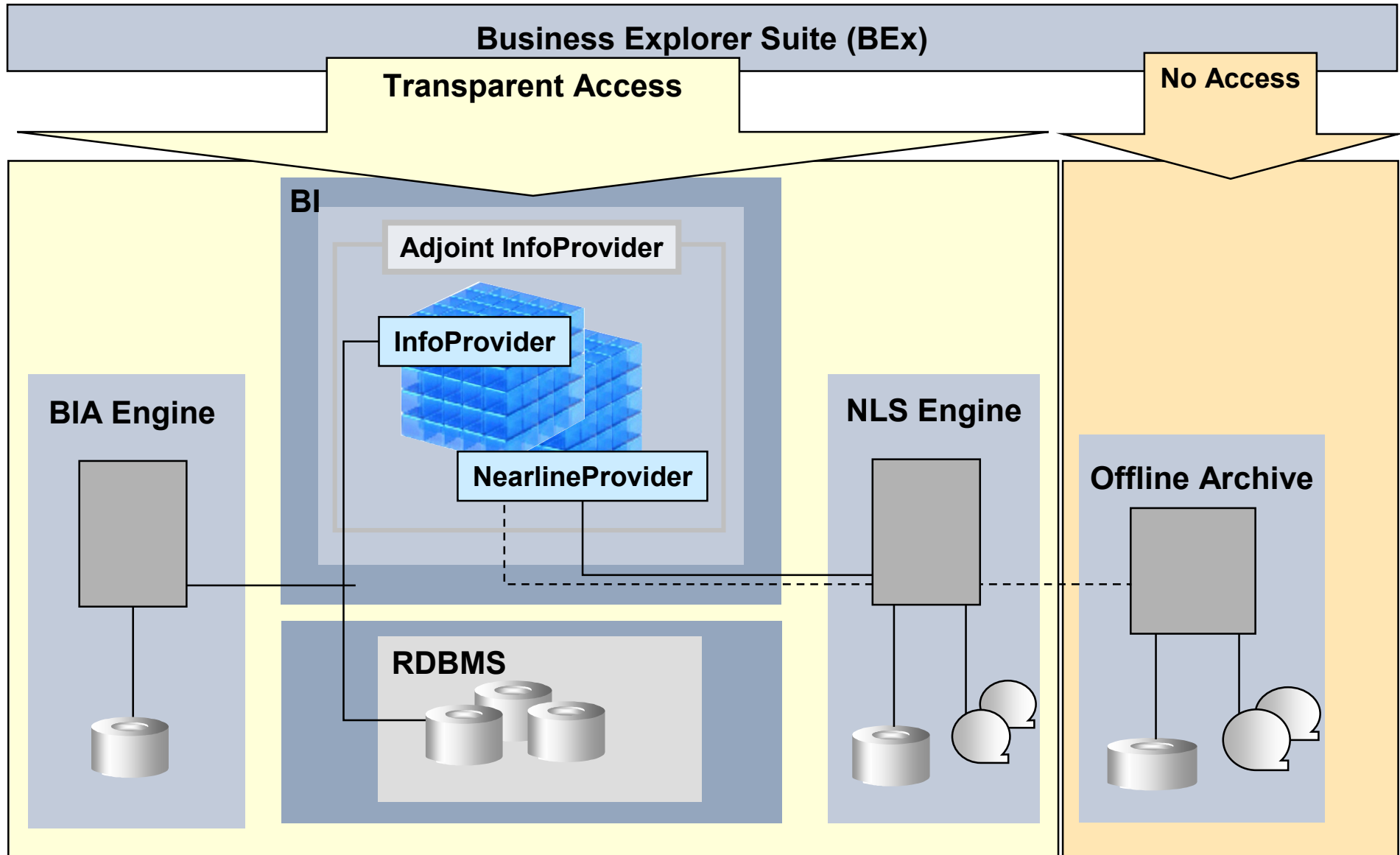
Contents Performance Requests Rollup Collapse Reconstruction Archiving

InfoCube requests for InfoCube:98 IC Education(ZEDU98I)

Request ID	R	C	C	D	R	Re	Loa	DTP/InfoPackage	Request D...	Update Date
251								Request w/o InfoPackage (APO Request)	02.08.2007	02.08.2007
132		✓						ZEDU00D -> ZEDU98I (DTP_55R2ZH0H31.07.2007	31.07.2007	31.07.2007

DA3 (1) 002 SAND101 INS

# Reporting Aspects (Query)



# Exemplary Query

Query Designer - Query: ZEDU98I\_Q001

Query Edit View Tools Help

**InfoProvider**

98 IC Education

- Key Figures
  - Billed Quantity
  - Costs (SAP Demo)
  - Net Value
  - Tax Amount
- Dimensions
  - Organization
  - Customer
  - Sales Employee
  - Version
  - Product
  - Data Package
  - Time
  - Unit

**Rows/Columns**

Free Characteristics

- Calendar Year/Month

Columns

- Key Figures
  - Billed Quantity
  - Costs (SAP Demo)
  - Net Value
  - Tax Amount

Area for Dimensions

Area for Dimensions

Area for Dimensions

Rows

- Calendar Year
- Company code

Preview

		Billed Quan	Costs (SAP)
a-Calendar	a-Company		
	b-Company		
b-Calendar	a-Company		
	b-Company		

Filter Rows/Columns

**Properties**

ZEDU98I\_Q001 (Query)

Rows/Columns Value Display Planning

Extended

General Variable Sequence Display

**Description**

ZEDU98I\_Q001

**Technical Name**

ZEDU98I\_Q001

**InfoProvider**

ZEDU98I

**Key Date**

Use Standard Date

Last Changed  
Owner: MICHAEL  
Last Changed By: MICHAEL  
Date/Time: 02.08.2007 15:54:43

Properties Tasks

DA3

1 Messages

Query ZEDU98I\_Q001 saved successfully

# Transparent Query Access

The screenshot displays the SAP Query Monitor interface. The main window shows the query 'ZEDU98I / ZEDU98I\_Q001' and the 'Query Display' set to 'List'. A 'Query Properties' dialog box is open, titled 'Query Properties -> Move into Query Designer'. An orange arrow points to the 'Read Near-Line Storage As Well' checkbox, which is checked. Other settings in the dialog include 'Read Mode' set to 'H Query to Read When You Navigate or Expand', 'Data Integrity' set to '0 All Part Providers Up to Securely Accessible S', 'Cache Mode' set to '1 Main Memory Cache Without Swapping', 'Update Cache Objects in Delta Process' checked, 'Optimization Mode' set to '0 Query Will Be Optimized after Generation', and 'Statistic Det.' set to '1 Only Front End/Calculation Layer Data'.

# Query Result with and without NLS Flag set

**ZEDU98I\_Q001** Validity of data: 02.08.2007

Chart Filter Info

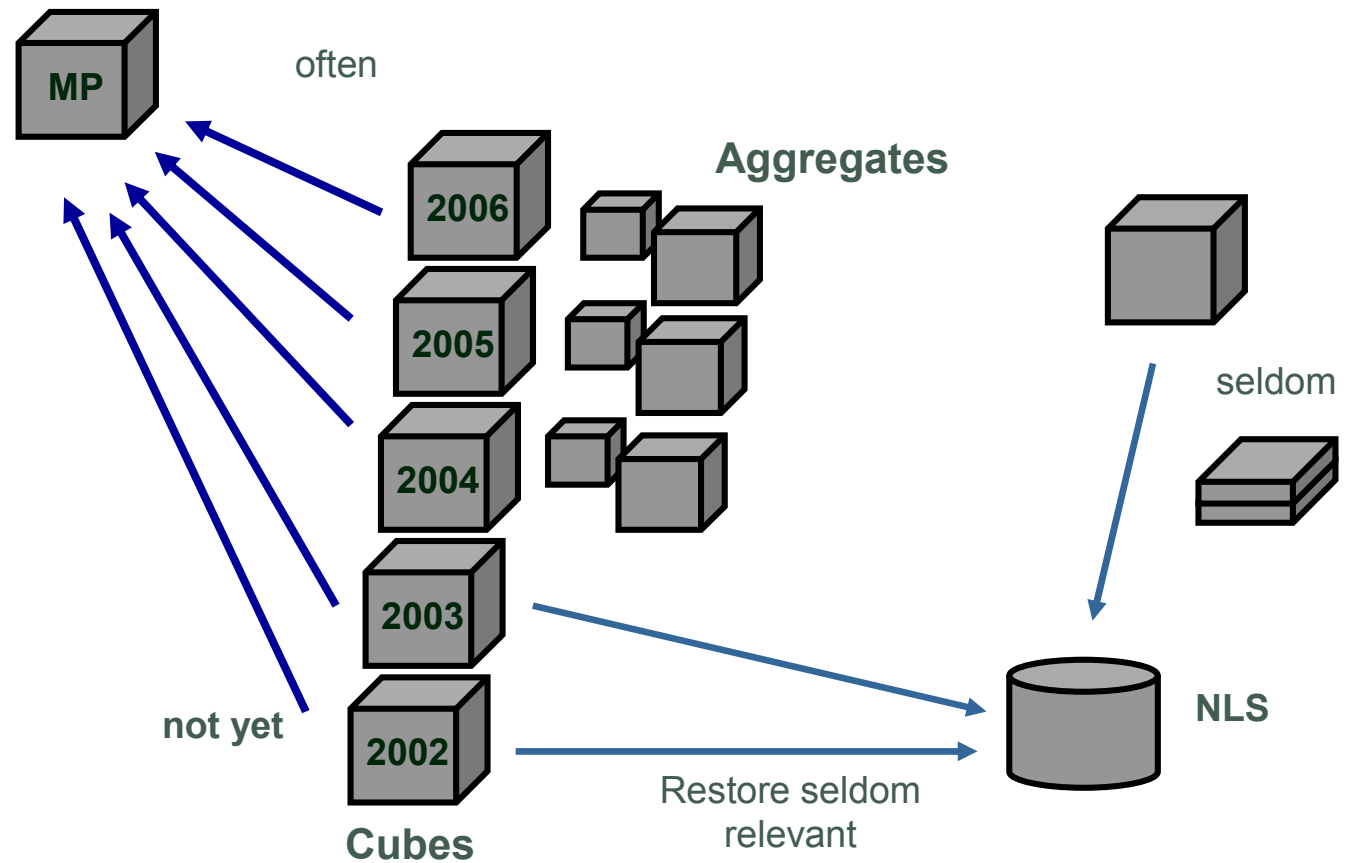
Calendar Year	Company code	Billed Quantity	Costs (SAP Demo)	Net Value	Tax Amount
1991	4000	2.821 ST	\$ 217.673,00	\$ 3.327.870,91	\$ 415.688,00
	<b>Result</b>	<b>2.821 ST</b>	<b>\$ 217.673,00</b>	<b>\$ 3.327.870,91</b>	<b>\$ 415.688,00</b>
1992	1000	2.912 ST	217.667,00 EUR	3.327.961,91 EUR	415.779,00 EUR
	2000	2.912 ST	217.733,00 EUR	3.326.960,91 EUR	415.779,00 EUR
	3000	2.912 ST	217.799,00 EUR	3.325.959,91 EUR	415.779,00 EUR
	4000	2.912 ST	217.795,00 EUR	3.328.962,91 EUR	415.779,00 EUR
	<b>Result</b>	<b>11.648 ST</b>	<b>870.994,00 EUR</b>	<b>13.309.845,64 EUR</b>	<b>1.663.116,00 EUR</b>
1993	1000	3.003 ST	217.789,00 EUR	3.329.053,91 EUR	415.870,00 EUR
	2000	3.003 ST	217.661,00 EUR	3.328.853,91 EUR	415.870,00 EUR
	3000	3.003 ST	217.661,00 EUR	3.328.853,91 EUR	415.870,00 EUR
	4000	3.003 ST	217.661,00 EUR	3.328.853,91 EUR	415.870,00 EUR
	<b>Result</b>	<b>12.012 ST</b>	<b>870.994,00 EUR</b>	<b>13.309.845,64 EUR</b>	<b>1.663.116,00 EUR</b>

**ZEDU98I\_Q001** Validity of data: 02.08.2007

Chart Filter Info

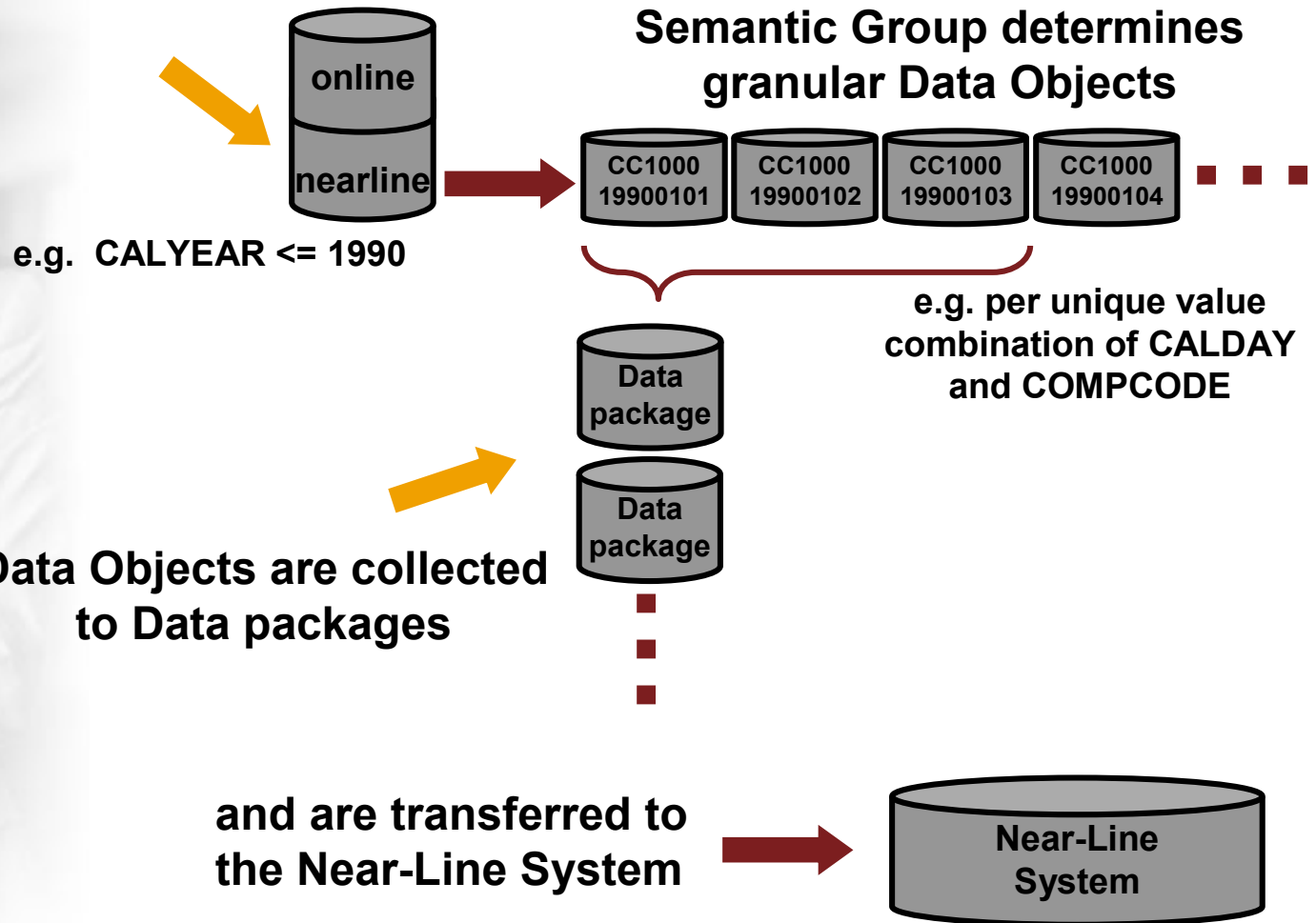
Calendar Year	Company code	Billed Quantity	Costs (SAP Demo)	Net Value	Tax Amount
1990	1000	2.700 ST	215.466,00 EUR	3.291.210,90 EUR	411.030,00 EUR
	2000	2.730 ST	217.710,00 EUR	3.328.780,91 EUR	415.597,00 EUR
	3000	2.730 ST	217.679,00 EUR	3.327.779,91 EUR	415.597,00 EUR
	4000	2.730 ST	217.745,00 EUR	3.326.778,91 EUR	415.597,00 EUR
	<b>Result</b>	<b>10.890 ST</b>	<b>868.600,00 EUR</b>	<b>13.274.550,63 EUR</b>	<b>1.657.821,00 EUR</b>
1991	1000	2.821 ST	\$ 217.739,00	\$ 3.326.869,91	\$ 415.688,00
	2000	2.821 ST	\$ 217.805,00	\$ 3.325.868,91	\$ 415.688,00
	3000	2.821 ST	\$ 217.704,00	\$ 3.328.871,91	\$ 415.688,00
	4000	2.821 ST	\$ 217.673,00	\$ 3.327.870,91	\$ 415.688,00
	<b>Result</b>	<b>11.284 ST</b>	<b>\$ 870.921,00</b>	<b>\$ 13.309.481,64</b>	<b>\$ 1.662.752,00</b>
1992	1000	2.912 ST	217.667,00 EUR	3.327.961,91 EUR	415.779,00 EUR
	2000	2.912 ST	217.733,00 EUR	3.326.960,91 EUR	415.779,00 EUR
	3000	2.912 ST	217.799,00 EUR	3.325.959,91 EUR	415.779,00 EUR
	4000	2.912 ST	217.795,00 EUR	3.328.962,91 EUR	415.779,00 EUR
	<b>Result</b>	<b>11.648 ST</b>	<b>870.994,00 EUR</b>	<b>13.309.845,64 EUR</b>	<b>1.663.116,00 EUR</b>

# Logical Partitioning of Info-Cubes → Near-Line Concept



# Package Based Communication in the Near-Line Interface

Selection Profile determines slice to be stored Near-Line



# Adjusting the Communication Packaging in the DAP

**Change Data Archiving Process ZEDU98D**

Data Archiving Process: ZEDU98D  
For DataStore Object: ZEDU98D (98 DSO Education)  
Long Description: Archive Data Store Object 98 on a yearly basis  
Short Description: Archive yearly  
Version: In Process (Saved)  
Active Version: Do(es) Not Exist

General Settings | Selection Profile | **Semantic Group** | Nearline Storage

**Sort Order**

Lckd	InfoObject	K.	Short Description
	0D_CO_CODE	<input type="checkbox"/>	Company code

InfoObject	Pos.	K.	Short Description
0CALDAY	1	<input checked="" type="checkbox"/>	Calendar Day
0D_MATERIAL	2	<input checked="" type="checkbox"/>	Material
0D_VERSION	3	<input checked="" type="checkbox"/>	Version
0D_DIS_CHAN	5	<input type="checkbox"/>	Distribution channel
0D_DIV	6	<input type="checkbox"/>	Division
0D_PROD_HII	7	<input type="checkbox"/>	Product hierarchy

**Nearline Storage**

Nearline Object: /BIC/ZEDU98D  
Nearline Connection: SAND\_NLS

**Size of Data Packet**

Maximum Size in MB: 20  
Maximum Number of Data Objects: 1

# Examine the Communication via the Job Log

Job log overview for job: BI\_ARCH-ZEDU98D-252 / 18211301

Date	Time	Message text	Message class
02.08.2007	18:21:16	OPEN_FOR_WRITE: Session=LSDA3_00000207 TableName=/BIC/ONZEDU98D	/SAND/0_NLS
02.08.2007	18:21:17	PUT_NEXT_OBJECT: Session=LSDA3_00000207 Writer=LSDA3_00000207_00000003_OFW DATA_OBJECT=1 PackageSize=90	/SAND/0_NLS
02.08.2007	18:21:18	CLOSE_WRITER: Session=LSDA3_00000207 Writer=LSDA3_00000207_00000003_OFW	/SAND/0_NLS
02.08.2007	18:21:36	CLOSE_WRITER: Session=LSDA3_00000207 Writer=LSDA3_00000207_00000003_OFW	/SAND/0_NLS
02.08.2007	18:21:36	OPEN_FOR_WRITE: Session=LSDA3_00000207 TableName=/BIC/ONZEDU98D	/SAND/0_NLS
02.08.2007	18:21:38	PUT_NEXT_OBJECT: Session=LSDA3_00000207 Writer=LSDA3_00000207_00000007_OFW DATA_OBJECT=2 PackageSize=91	/SAND/0_NLS
02.08.2007	18:21:38	CLOSE_WRITER: Session=LSDA3_00000207 Writer=LSDA3_00000207_00000007_OFW	/SAND/0_NLS
02.08.2007	18:21:56	CLOSE_WRITER: Session=LSDA3_00000207 Writer=LSDA3_00000207_00000007_OFW	/SAND/0_NLS
02.08.2007	18:21:57	OPEN_FOR_WRITE: Session=LSDA3_00000207 TableName=/BIC/ONZEDU98D	/SAND/0_NLS
02.08.2007	18:21:58	PUT_NEXT_OBJECT: Session=LSDA3_00000207 Writer=LSDA3_00000207_00000011_OFW DATA_OBJECT=3 PackageSize=91	/SAND/0_NLS
02.08.2007	18:21:59	CLOSE_WRITER: Session=LSDA3_00000207 Writer=LSDA3_00000207_00000011_OFW	/SAND/0_NLS
02.08.2007	18:22:17	CLOSE_WRITER: Session=LSDA3_00000207 Writer=LSDA3_00000207_00000011_OFW	/SAND/0_NLS
02.08.2007	18:22:17	OPEN_FOR_WRITE: Session=LSDA3_00000207 TableName=/BIC/ONZEDU98D	/SAND/0_NLS
02.08.2007	18:22:19	PUT_NEXT_OBJECT: Session=LSDA3_00000207 Writer=LSDA3_00000207_00000015_OFW DATA_OBJECT=4 PackageSize=91	/SAND/0_NLS
02.08.2007	18:22:19	READER SUCCESSFULLY CLOSED	RSDA
02.08.2007	18:22:19	CLOSE_WRITER: Session=LSDA3_00000207 Writer=LSDA3_00000207_00000015_OFW	/SAND/0_NLS
02.08.2007	18:22:37	Status changed from '35' to '40' for request 253	RSDA
02.08.2007	18:22:37	ALTER_REQUEST: Session=LSDA3_00000207 RequestName=NLRQ_BC500501TE1USYTAZNFWMK90 Action=CLOSE	/SAND/0_NLS
02.08.2007	18:23:20	Status changed from '35' to '40' for request 252	RSDA
02.08.2007	18:23:20	WRITER SUCCESSFULLY CLOSED	RSDA
02.08.2007	18:23:20	COPY PHASE SUCCECSSLFULLY ENDED	RSDA
02.08.2007	18:23:20	Locks set for request 252 for data archiving process ZEDU98D	RSDA
02.08.2007	18:23:20	Status changed from '40' to '45' for request 253	RSDA
02.08.2007	18:23:20	Status changed from '40' to '45' for request 252	RSDA
02.08.2007	18:23:20	Unlocked for data archiving process ZEDU98D for request 252	RSDA
02.08.2007	18:23:20	OPEN_CURSOR: Session=LSDA3_00000207 TableName=/BIC/ONZEDU98D	/SAND/0_NLS
02.08.2007	18:23:22	FETCH_NEXT_PACKAGE: Session=LSDA3_00000207 Cursor=LSDA3_00000207_00000019_OCU request. PackageSize=4.520	/SAND/0_NLS
02.08.2007	18:23:22	FETCH_NEXT_PACKAGE: Session=LSDA3_00000207 Cursor=LSDA3_00000207_00000019_OCU received PackageSize=90	/SAND/0_NLS
02.08.2007	18:23:22	FETCH_NEXT_PACKAGE: Session=LSDA3_00000207 Cursor=LSDA3_00000207_00000019_OCU request. PackageSize=4.520	/SAND/0_NLS
02.08.2007	18:23:23	SAND/DNA info: fetch complete	/SAND/0_NLS

DA3 (1) 002 SAND101 INS



The Fast Track to SAP Knowledge

## AGENDA

Information Lifecycle Management

Near-Line Functionality

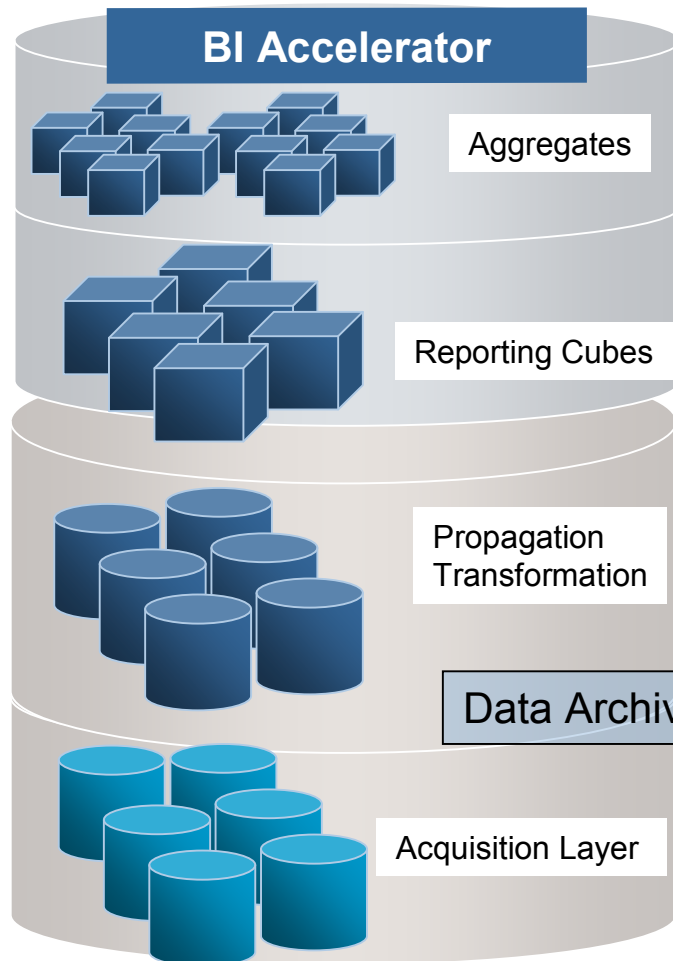
Enterprise Data Warehousing

Q & A

THE BEST-RUN BUSINESSES RUN SAP™



## Lesson learned : Nearline concentrates on Detailed Data



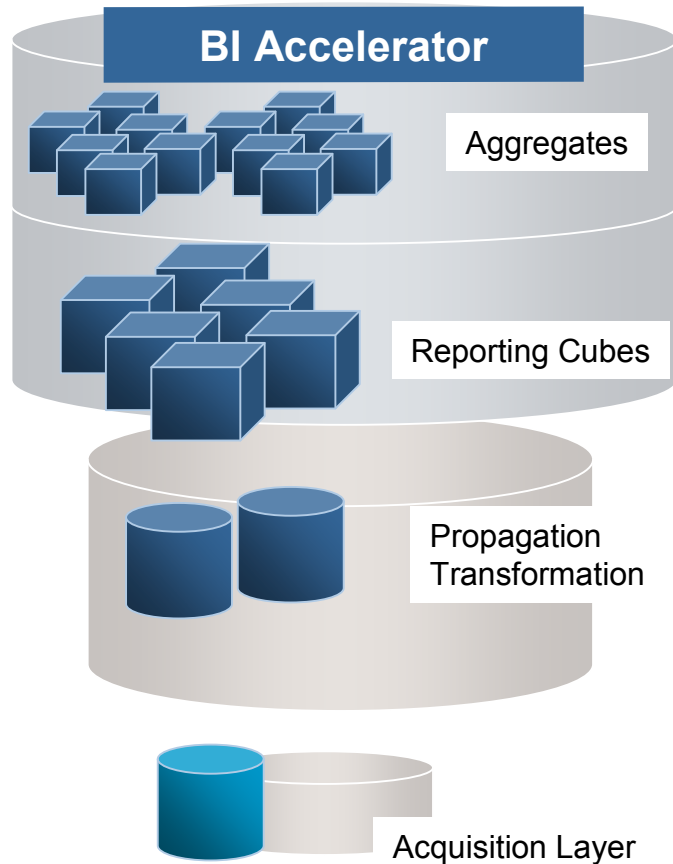
**50%-70% of overall data volume  
are in granular layers**

- Relieving SAP BI from detailed data
- Compressed by more than 85% with SAND/DNA
- Used as a „Corporate Memory“
  - Details in its “pure” form
  - Infrequently used detailed data
  - “Just-in-Case” data
  - Aged and historical data
  - Legacy data



**Efficient Corporate  
Memory**

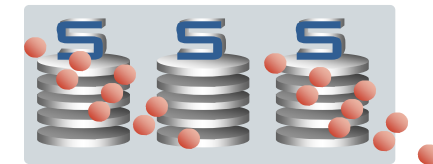
# Usage of the „corporate memory“



## Greater Flexibility in Responding to New Analytical Requirements

- deriving new InfoCubes or DSO's
- building new KPI's based on historical data

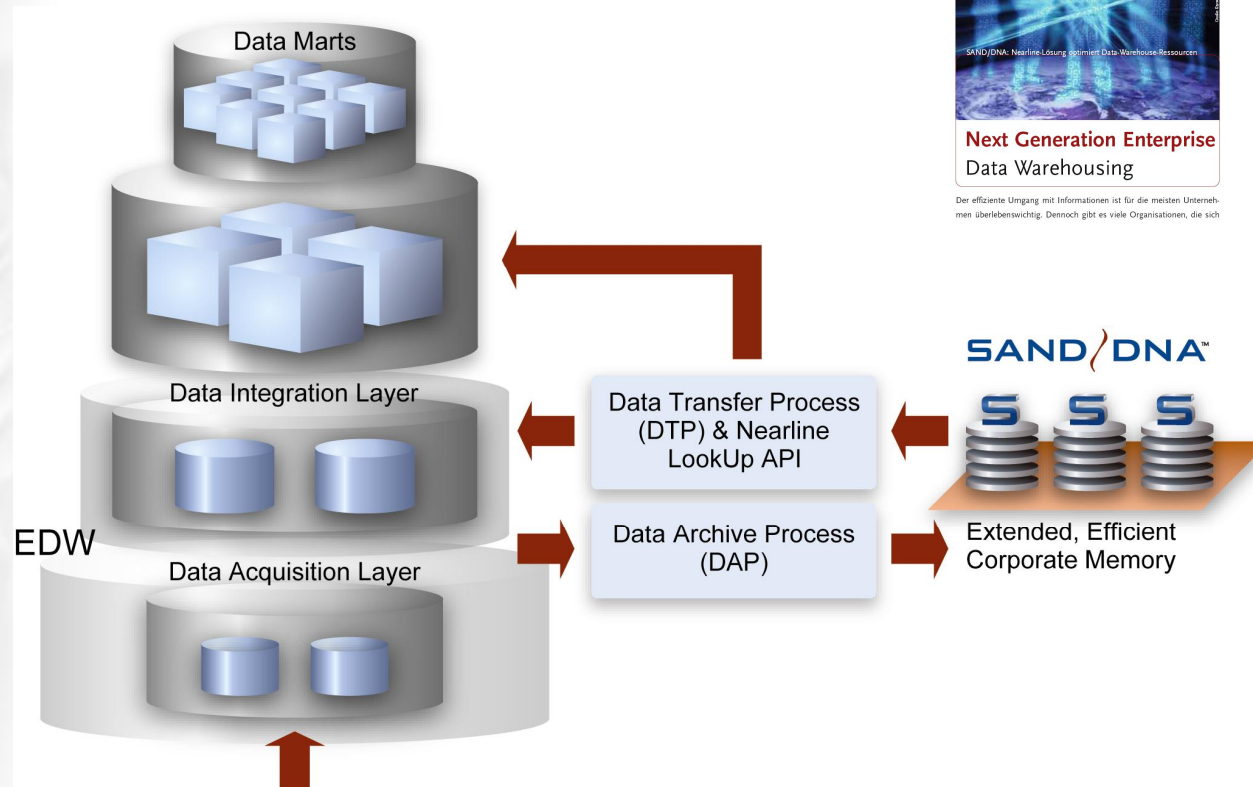
Data Transfer Process (DTP)  
& Look Up API



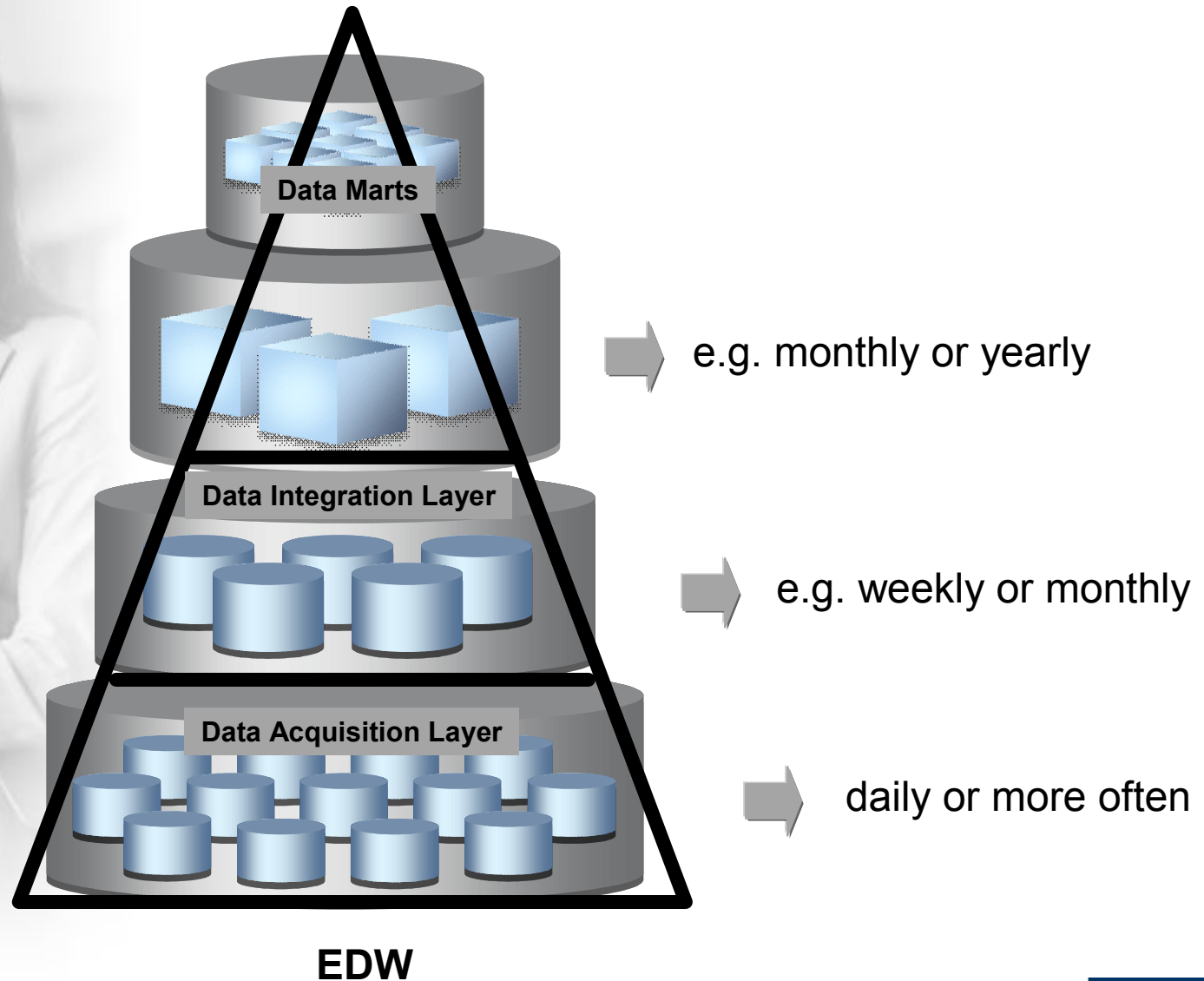
**Efficient Corporate  
Memory**

# Next generation EDW-Layer: Anticipating the Unknown

storing detailed data according business and legal requirements  
... and not according data management or costs constraints ...



# Different Archive Frequency per Layer



# DTP Access to Corporate Memory

**Change Data Transfer Process**

Data Transfer Process: Load from Archive of ZEDU98D  
ID: DTP\_AB5Z7I4NAAA4420KY0HXU08Z6K  
Version: New (Inactive, not executable)

**Extraction** | Update | Execute

Data Source: DataStore Object  
ZEDU98D  
98 DSO Education

Extraction Mode: Full

Package Size: 10.000  
Key Date for Master Data:   
 Currency conversion

Extraction From:  
 Active Table  
 DataStore Change Log  
 Archive

**Creation of Data Transfer Process**

Data Transfer Proc.: Load from Archive of ZEDU98D  
DTP Type: Standard (Can Be Scheduled)

**Target of DTP**

Object Type: InfoCube  
Name: ZEDU98T (98 TC Education)

**Source of DTP**

Object Type: DataStore Object  
Name: ZEDU98D

Administration | Transport Connection | Documents | BI Content | Translation | Metadata Repository

DA3 (1) 002 | SAND101 | INS

# Full Transformation Flexibility with Corporate Memory

The screenshot displays the SAP Transformation Change interface. The main window shows a transformation named "ODSO ZEDU98D -> CUBE ZEDU98T". The source is "98 DSO Education (ZEDU98D)" and the target is "98 TC Education (ZEDU98T)". The version is "In Process" and is marked as "Not saved". The active version is "Executable".

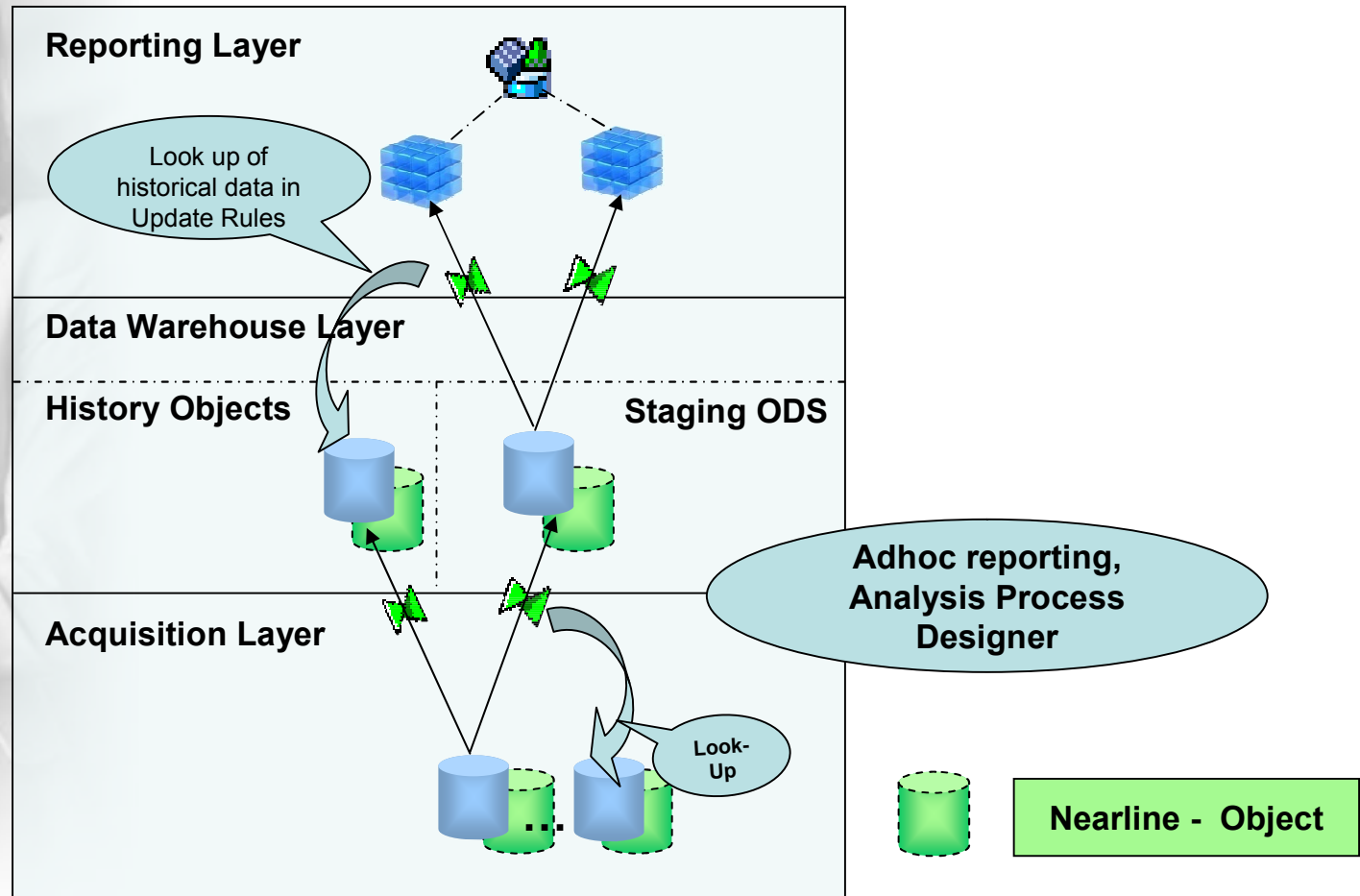
The interface shows a mapping between source data objects and target data objects. The source data objects are listed in a table on the left, and the target data objects are listed in a table on the right. Arrows indicate the mapping between them.

98 DSO Education (ZEDU98D)				Rule Group: Standard G		
Posi	Ke	InfoObject	Ico	Rule Name	Posi	
1	🔑	0CALDAY	🕒	🕒 0CALDAY	1	🔑
2	🔑	0D_MATERIAL	🏠	🕒 0CALMONTH	2	🔑
3	🔑	0D_VERSION	🏠	🕒 0CALQUARTER	3	🔑
4		0D_CO_CODE	🏠	🕒 0CALYEAR	4	🔑
5		0D_DIS_CHAN	🏠	= 0D_CO_CODE	5	
6		0D_DIV	🏠	= 0D_DIS_CHAN	6	
7		0D_PROD_HIE	🏠	= 0D_DIV	7	
8		0D_SALE_EMP	🏠	= 0D_PROD_HIE	8	
9		0D_SALE_ORG	🏠	= 0D_SALE_EMP	9	
10		0D_SOLD_TO	🏠	= 0D_SALE_ORG	10	
11		0D_VTYPE	🏠	= 0D_SOLD_TO	11	
12		0D_COST	🏠	= 0D_VERSION	12	
13		0DOC_CURRCY	🏠	= 0D_MATERIAL	13	

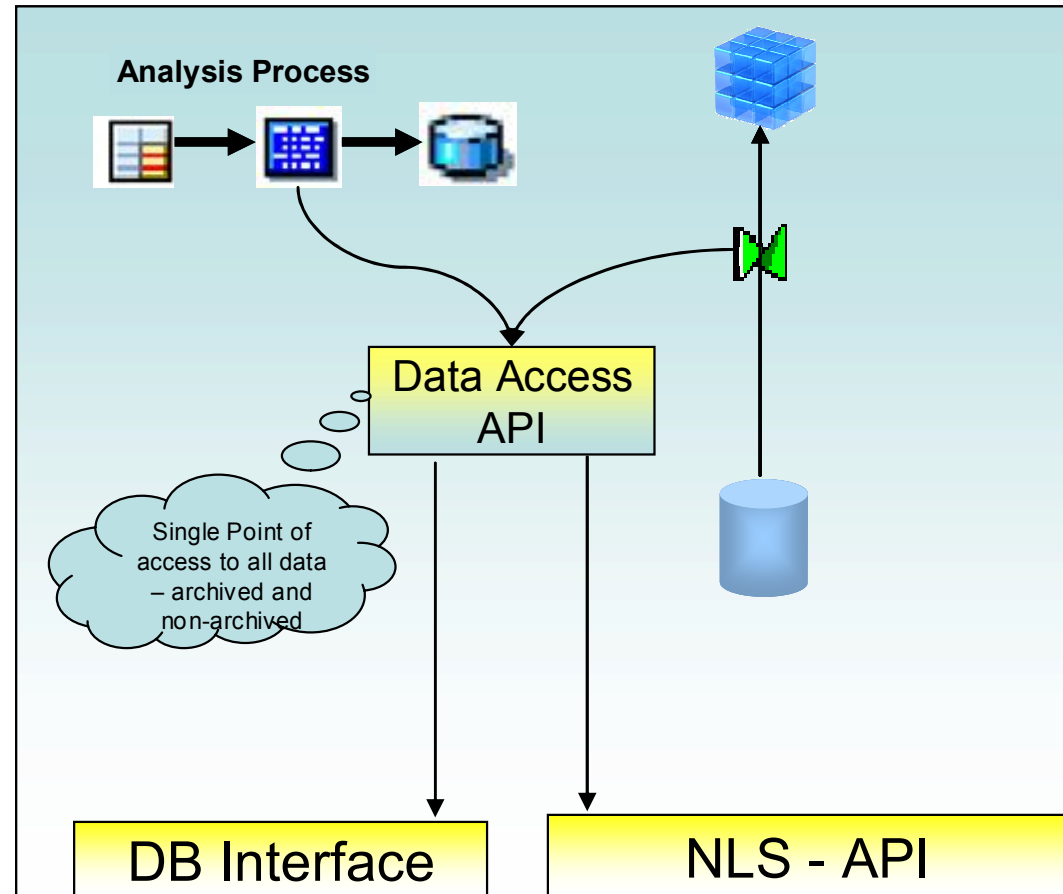
The interface also includes a sidebar with navigation options: Modeling, InfoProvider, InfoObjects, InfoSources, DataSources, Source Systems, Open Hub Desti, Find, and Favorites. At the bottom, the status bar shows "DA3 (1) 002 SAND101 INS".

# Look-Ups in the Data Flow Architecture

Look-Ups are often used e.g. to extend with derived attributes



# Usage of Look-Up API in Analysis Processes





**The Fast Track to SAP Knowledge**

## **AGENDA**

Information Lifecycle Management

Near-Line Functionality

Enterprise Data Warehousing

**Q & A**

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