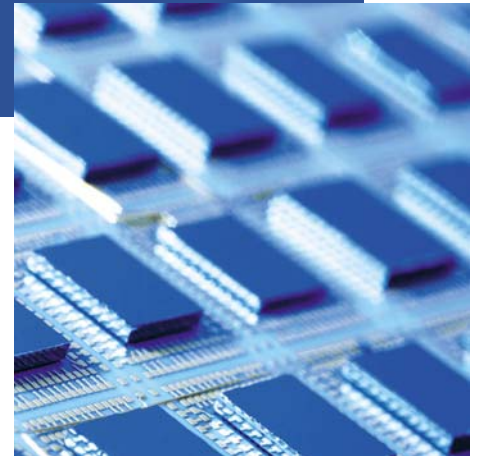


# How healthy are our DB2 for z/OS Catalogs in 2005?

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# Agenda

1. Why (UBS AG has decided to) analyze (its) DB2 for z/OS environments ?
2. Which kind of investigations have been or may be performed ?
3. Real life findings
4. Summary and conclusions

# Why UBS AG has decided to analyze its DB2 environments ?

- **Main reasons for CLEANUP**

- Overall performance during catalog access
- Migration to data-sharing with parallel sysplex
- Companies merger

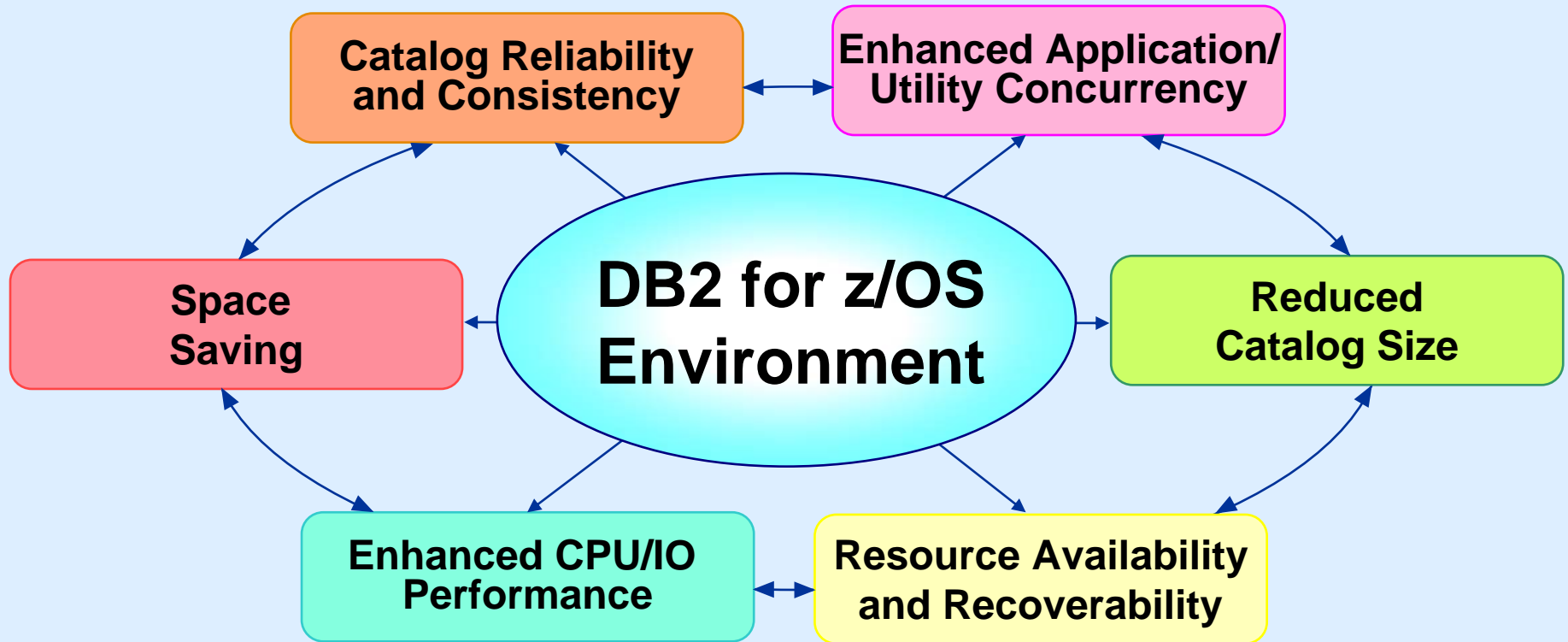
## IT at AG

- ~ 60'000 MIPS,
- ~ 60 TB of DB2 data processed in parallel sysplex env.
- ~ 65 DB2 subsystems
- ~ 17 group attach members for Prod.: 12-way // -SYSPLEX (with GDPS)

- **Main reasons for CONTROL**

- System-wide DB2 performance
- Overall availability and recoverability of DB2-objects
- Confidence in the integrity of the catalog
- Easier problem determination and trouble-shooting

# The performed Investigations classified into 6 main Areas of Concern:



# Potential Space Saving

- Tablespaces which could be Compressed
- **Orphan Tablespace/Indexspace Datasets**
- **Orphan Image Copy Datasets**
- Orphan Archive Datasets
- Tablespaces with the Same Name
- Identical Tables and Indexes
- **Indexes with the Same Columns**
- **Objects created by Obsolete USERIDs**
- Indexes not used by Static SQL
- Obsolete Data in PLAN TABLEs
- Incremental Image Copy not used

# Enhanced Catalog Reliability and Consistency

- **Catalog inconsistency checks**
- Unused STOGROUPs
- Aliases without Table
- **Plans/Packages with Missing DBRM Members**
- Broken Pages or Links in the Catalog
- Unapropriate ZPARMS for SAP
- Unused Distinct Types
- TS/IX-spaces with missing GBP definition in CFRM
- **Compression Switched on/off but no REORG/LOAD**

# Enhanced CPU/IO Performance

(1 of 2)

- **Objects with No/Obsolete Statistics**
- Directory Pagesets in Multiple Extents
- Foreign Keys without an Index
- **Low CLUSTERRATIO on Index**
- Tablespaces/Indexspaces candidate for REORG
- **Inefficient Buffer Pool Assignments**
- Tables that may require an Index
- **Orphan Image Copy Entries in SYSIBM.SYSCOPY**

# Enhanced CPU/IO Performance

(2 of 2)

- Inefficient Compression of Tablespaces
- **Tables that may require a Clustering Index**
- **Plans/Packages affected by Missing Statistics**
- Workdatabase with Tablespaces in Multiple Extents
- Indexes candidate to be 'NOT PADDED' (from V8)
- **Plans/Packages candidate for REBIND**
- Plans/Packages that does not release at COMMIT time
- Stored Procedures not running under WLM control

# Enhanced Application / Utility Concurrency

(1 of 2)

- STOGROUPs which should not be STOSPACED
- Tablespaces which could be Segmented
- **Tablespaces which could be Partitioned**
- **BIND Parameter Inconsistencies**
- Unbalanced Tablespace Partition Distribution
- Non Partitioned IX's with excessive piecesize
- Partition independence not used in Utilities

# Enhanced Application / Utility Concurrency

(2 of 2)

- **Inline Utilities not used during LOAD/REORG**
- Plans/Packages not using DRDA Protocol
- **Oversized LOCKMAX**
- NPIs candidates to be converted to DPSIs (from V8)
- Tablespaces having TRACKMOD NO
- Tablespaces not reorganizable with SHRLEVEL CHANGE

# Reduced Catalog Size

- **Orphan Tablespace/Indexspace Definitions**
- Rarely Accessed Tablespaces/Indexspaces
- Plans with DBRMs already in Packages
- **Identical Views**
- Multiple Synonyms
- **Objects with Missing Dependents**
- **Duplicate Privileges for Objects** (< DB2 V5)
- Redundant Privileges for Objects
- Tables/Views not used by Static SQL
- Packages without a Plan
- Multiple Aliases for the Same Table or View
- Packages having too much versions

# Resource Availability and Recoverability

(1 of 2)

- **Invalid Plans or Packages**
- Orphan Archive Log Entries in the BSDS
- **Unrecoverable Tablespaces**
- Non STOGROUP Managed Tablespaces/Indexspaces
- Tables not protected by RESTRICTION ON DROP
- Tables which may be damaged by LOAD REPLACE
- Authorizations granted by Obsolete USERIDs
- **Active Log Data Sets on the Same Volume**

# Resource Availability and Recoverability

(2 of 2)

- **Both BSDS Data Sets on the Same Volume**
- Unrecoverable Indexes
- IX's which could be enabled for Image Copy
- Objects defined in the default Database DSNDB04
- **Table/-Indexspaces close to VSAM Data Set Size Limits**

# Real Life Findings in

Insurance's, Financial Institutes, Cross Services, Industry



# Top Ten Significant Real Life Findings in a: (CH) Bank using DB2 V7

(DB2 environment created under DB2 V1 (1985), 8 way //Sysplex Data Sharing)

<b>Objects with No/Obsolete Statistics</b>	32'360 4'530	50% 20%	<ul style="list-style-type: none"> <li>• TS/TB/IX with old Statistics (older than 1 year)</li> <li>• Missing RUNSTATS after LOAD/REORG</li> </ul>
<b>STOGROUPs which should not be STOSPACED</b>	35	100%	It was assumed that STOSPACE Info is used by the Optimizer
<b>Tablespaces which could be Segmented</b>	1'700	30%	Simple TS not converted when segmented TS were introduced
<b>Foreign Keys without an Index</b>	1'540	30%	<ul style="list-style-type: none"> <li>• Wrong design</li> <li>• Incomplete implementation</li> </ul>
<b>Low CLUSTERRATIO on Index</b>	477 200	35% 13%	<ul style="list-style-type: none"> <li>• Reorg scheduled at an inappropriate time</li> <li>• Changes in use of data</li> </ul>
<b>Orphan Tablespace/Indexspace Datasets</b>	340	10%	Drop of "user defined" TS's (approx. 6'000 Cylinders (3390))
<b>Rarely Accessed Table-/Indexspaces</b>	640 500	17% 12%	<ul style="list-style-type: none"> <li>• Users/Creators left the organization</li> <li>• Created for testing purposes, no longer required</li> </ul>
<b>Identical Views</b>	123'700	95%	Security concept based on views (not dropped when RACF was introduced)
<b>Duplicate Privileges for Objects</b>	45'000	N/A	Multiple grants for the same privilege and the same grantee
<b>TS/IX close to VSAM Dataset Limits</b>	170	3%	<ul style="list-style-type: none"> <li>• Unplanned growth of tables</li> <li>• Wrong DS sizing rules in Change Management</li> </ul>

# Top Ten Significant Real Life Findings in a: (G) Insurance using DB2 V7

(DB2 environment created under DB2 V4, currently migrating to //Sysplex Data Sharing)

Findings	Number	Perc.	Mainly caused by:
<b>Tablespaces which could be Partitioned</b>	150	10%	Natural table growth and tables designed before the availability of partitioning
<b>Directory Pagesets in Multiple Extents</b>	4	33%	Proliferation of redundant and/or obsolete objects
<b>BIND Parameter Inconsistencies</b>	650	40%	Changes in processing or installation parameters (CURRENTDATA=Y and ISO=RR)(versus N and CS)
<b>Inefficient Buffer Pool Assignments</b>	18'750	90%	Uncontrolled usage/assignment of bufferpools (eg. near all objects in BP0)
<b>Orphan Image Copy Entries in SYSIBM.SYSCOPY</b>	8'960	17%	Datasets deleted by the Test DB2
<b>Indexes with the Same Columns</b>	2'150	12%	Creation of new indexes instead of adding columns to existing indexes
<b>Active Log Data Sets on the Same Volume</b>	14	80%	Reuse of "define cluster" statements
<b>Both BSDS Data Sets on the Same Volume</b>	N/A	N/A	Insufficient DB2 storage management
<b>Unbalanced Tablespace Partition Distribution</b>	300	50%	Inefficient physical design of partitioning key
<b>Oversized LOCKMAX</b>	7'270	50%	Changed concurrency requirements (TS with LOCKMAX=0)

# Top Ten Significant Real Life Findings in a: (CH) Cross Service using V7 (DB2 environment created under DB2 V3, now using //Sysplex Data Sharing)

Findings	Number	Perc.	Mainly caused by:
<b>STOGROUPs which should not be STOSPACED</b>	7	25%	STOSPACE considered as important as RUNSTATS
<b>Foreign Keys without an Index</b>	1'420	17%	Indexes not mandatory for foreign keys
<b>Tables that may Require an Index</b>	370	8%	Indexes dropped and not recreated
<b>Orphan Tablespace/Indexspace Definitions</b>	123	4%	TS/IX DB2 datasets deleted outside of DB2
<b>Invalid Plans or Packages</b>	742	10%	Associated objects dropped or altered
<b>Compression Switched on/off but no REORG/LOAD</b>	92	7%	Incomplete implementation of compression
<b>Identical Tables and Indexes</b>	837	10%	TB/IX created for testing purposes
<b>Objects with Missing Dependents</b>	270 13	7% 2%	<ul style="list-style-type: none"> <li>• TB without rows</li> <li>• TB without IX defined on the primary key</li> </ul>
<b>Oversized LOCKMAX</b>	5'425	95%	LOCKMAX=0
<b>Plans/Packages affected by Missing Statistics</b>	927	13%	REBIND done before RUNSTATS

# Top Ten Significant Real Life Findings in a: (F) Industry using DB2 V7 (DB2 environment created under DB2 V3, currently implementing //Sysplex Data Sharing)

Findings	Number	Perc.	Mainly caused by:
<b>Objects with No/Obsolete Statistics</b>	14'720	80%	Missing RUNSTATS
<b>Tablespaces which could be Partitioned</b>	17	30%	Unplanned growth of tables
<b>Foreign Keys without an Index</b>	720	50%	Incomplete implementation
<b>BIND Parameter Inconsistencies</b>	325	50%	ISO=RR and CURRENTDATA=Y
<b>Low CLUSTERRATIO on Index</b>	1'235	30%	Missing reorgs
<b>Invalid Plans or Packages</b>	720	10%	Associated objects altered
<b>Orphan Image Copy Datasets</b>	135'720	N/A	Datasets not deleted after MODIFY RECOVERY
<b>Rarely Accessed Tablespaces/Indexspaces</b>	750	10%	Objects created for testing purposes
<b>Identical Tables and Indexes</b>	870	10%	Versions of tables created for testing purposes
<b>Oversized LOCKMAX</b>	527	25%	LOCKMAX=0 (default in ZPARMS)

# Top Ten Significant Real Life Findings in a: (B) Industry using DB2 V7

(Archiving System created under DB2 V5, currently without //Sysplex)

Findings	Number	Perc.	Mainly caused by:
<b>Objects with No/Obsolete Statistics</b>	2'470	25%	Missing RUNSTATS after (mass-) inserts
<b>Directory Pagesets in Multiple Extents</b>	2	20%	SYSLGRNX too big (missing MODIFY RECOVERY)
<b>Foreign Keys without an Index</b>	36	5%	Wrong implementation of RI
<b>Low CLUSTERRATIO on Index</b>	340	40%	Changes in use of data
<b>Plans/Packages with Missing DBRM Members</b>	70	5%	DBRM members deleted from DBRM Library
<b>Orphan Image Copy Entries in SYSIBM.SYSCOPY</b>	18'200	50%	Missing "MODIFY RECOVERY"
<b>Compression Switched on/off but no REORG/LOAD</b>	53	5%	Incomplete activation of compression
<b>Rarely Accessed Tablespaces/Indexspaces</b>	70	9%	Objects no longer required
<b>Identical Views</b>	7'700	50%	Many users access the same data
<b>Inefficient Compression of Tablespaces</b>	230	23%	Compression of small tables

# Top Ten Significant Real Life Findings in a: (A) Financial serv. using V7

(Dev./Test environment created under DB2 V3, currently being migrated to DB2 V8)

Findings	Number	Perc.	Mainly caused by:
<b>Objects with No/Obsolete Statistics</b>	12'720	93%	No housekeeping (RUNSTATS)
<b>Tablespaces which could be Compressed</b>	57	8%	Unplanned growth of tables
<b>Low CLUSTERRATIO on Index</b>	2'457	70%	No housekeeping (REORG)
<b>Tablespaces/Indexspaces candidate for REORG</b>	5'833	70%	No housekeeping
<b>Inline Utilities not used during LOAD/REORG</b>	723	80%	New features not used
<b>Objects with Missing Dependents</b>	458	N/A	Incomplete abandoned implementation
<b>Aliases without Table</b>	123	10%	Incomplete implementation
<b>Multiple Aliases for the Same Table or View</b>	65	5%	Lack of information about the existing objects
<b>LOB Parm of Stored Proc. without a Null Indicator</b>	17	60%	Tests
<b>Unrecoverable Tablespaces</b>	375	12%	No housekeeping (COPY)

# Top Ten Significant Real Life Findings in a: (US) Bank using DB2 V7

(DB2 environment created under DB2 V3, currently being migrated to DB2 V8)

Findings	Number	Perc.	Mainly caused by:
<b>Objects with No/Obsolete Statistics</b>	37'725	60%	Insufficient housekeeping (RUNSTATS)
<b>Indexes which could be enabled for Image Copy</b>	2'370	45%	No rules in place Weakness in Change Management
<b>Tables not protected by Restriction on DROP</b>	2'247	23%	No rules in place Weakness in Change Management
<b>Low CLUSTERRATIO on Index</b>	1'293	30%	Bad housekeeping (REORG)
<b>Tablespaces/Indexspaces candidate for REORG</b>	1'880	18%	Bad housekeeping (REORG)
<b>Inefficient Buffer Pool Assignments</b>	12'600	98%	BP=0 everywhere
<b>Orphan Tablespace/Indexspace Definitions</b>	722	10%	Datasets deleted outside of the control of DB2
<b>Orphan Image Copy Datasets</b>	135'732	N/A	Datasets not deleted after MODIFY RECOVERY
<b>Unrecoverable Tablespaces</b>	720	10%	Bad housekeeping (missing image copy)
<b>Plans using the DB2 Private Protocol instead of DRDA</b>	322	12%	Impact: These plan are no more usable with DB2 Version 6

# Top Ten Significant Real Life Findings in a: ■ ■ (I) Insurance using DB2 V7

(DB2 environment created under DB2 V2)

Findings	Number	Perc.	Mainly caused by:
<b>Objects with No/Obsolete Statistics</b>	1'242	18%	No RUNSTATS after LOAD/REORG
<b>STOGROUPS which should not be STOSPACED</b>	17	100%	It was assumed that STOSPACE Info is used by the Optimizer
<b>Unrecoverable Indexes</b>	915	17%	"Copy YES" set, but no IC strategy in place
<b>Directory Pagesets in Multiple Extents</b>	2	20%	Oversized SYSLGRNX (no MODIFY RECOVERY)
<b>Tablespaces which could be Compressed</b>	73	8%	Hardware compression not initialized
<b>Orphan Image Copy Entries in SYSIBM.SYSCOPY</b>	13'725	50%	No MODIFY RECOVERY
<b>Indexes on Variable Columns</b>	73	5%	Wrong implementation
<b>Duplicate Privileges for Objects</b>	193'720	N/A	Multiple grants of the same privilege to the same grantee
<b>Redundant Privileges for Objects</b>	17'500	10%	Some privileges granted to public and individual users
<b>Unrecoverable Tablespaces</b>	123	10%	Use of REPAIR NOCOPYPEND after LOAD/REORG with LOG=NO

# Summary

<p style="text-align: center;"><b>Very often found inconsistencies / discrepancies: (1 of 2)</b></p>	Potential Space Saving	Enhanced Reliability and Consistency	Enhanced CPU/IO Performance	Enhanced Application/Utility Concurrency	Reduced Catalog Size	Resource Availability and Recoverability	E F F O R T
Objects with No/Obsolete Statistics		*	***				++
Tablespaces which could be Segmented	*			***		**	+++
Tablespaces which could be Compressed	***		**				+
Foreign Keys without an Index			***				++
Low CLUSTERRATIO on Index			***				++
Inefficient Buffer Pool Assignments			***	**			+++
Orphan Tablespace/Indexspace Datasets	***	**					++
Orphan Image Copy Entries in SYSIBM.SYSCOPY		*	***	**	*		++

Benefit of solving: \*\*\* = very high, \*\* = high, \* = medium

Estimated/experienced Effort for solving: +++ = high, ++ = medium, + = low

## Very often found inconsistencies / discrepancies: (2 of 2)

	Potential Space Saving	Enhanced Reliability and Consistency	Enhanced CPU/IO Performance	Enhanced Application/Utility Concurrency	Reduced Catalog Size	Resource Availability and Recoverability	P R O T E C T
Indexes with the Same Columns	**		**			*	++
Duplicate Privileges for Objects (< DB2 V5)			*		***		+++
Indexes on Variable Columns			***				++
Plans/Packages affected by Missing Statistics			***	*			++
Table/-Indexspaces close to VSAM Data Set Size Limits			*			***	+
Objects with Missing Dependents	**				***		++

Benefit of solving: \*\*\* = very high, \*\* = high, \* = medium

Estimated/experienced Effort for solving: +++ = high, ++ = medium, + = low

## Often found inconsistencies / discrepancies: (1 of 5)

	Potential Space Saving	Enhanced Reliability and Consistency	Enhanced CPU/IO Performance	Enhanced Application/Utility Concurrency	Reduced Catalog Size	Resource Availability and Recoverability	EFFORT
STOGROUPs which should not be STOSPACED				***		*	+
Incremental Image Copy not used	***			**		***	++
Tablespaces which could be Partitioned			*	***		**	+++
Directory Pagesets in Multiple Extents	*		***			**	++
BIND Parameter Inconsistencies				***		*	+++
Tablespaces/Indexspaces candidate for REORG	*		***			**	++
Orphan Table-/Indexspace Definitions		*			***	**	+
Invalid Plans or Packages		**	*			***	++

Benefit of solving: \*\*\* = very high, \*\* = high, \* = medium

Estimated/experienced Effort for solving: +++ = high, ++ = medium, + = low

## Often found inconsistencies / discrepancies: (2 of 5)

	Potential Space Saving	Enhanced Reliability and Consistency	Enhanced CPU/IO Performance	Enhanced Application/Utility Concurrency	Reduced Catalog Size	Resource Availability and Recoverability	P O R T F E
Orphan Image Copy Datasets	***	*					++
Orphan Archive Log Entries in the BSDS		*				***	++
Unrecoverable Tablespaces						***	++
Rarely Accessed Tablespaces/Indexspaces	***				***		+
Plans with DBRMs already contained in Packages		*			**		++
Identical Views		*			***		++
Objects defined in the default Database DSNDB04					*	**	+
Identical Tables	**				*		++

Benefit of solving: \*\*\* = very high, \*\* = high, \* = medium

Estimated/experienced Effort for solving: +++ = high, ++ = medium, + = low

## Often found inconsistencies / discrepancies: (3 of 5)

	Potential Space Saving	Enhanced Reliability and Consistency	Enhanced CPU/IO Performance	Enhanced Application/Utility Concurrency	Reduced Catalog Size	Resource Availability and Recoverability	P O R T
Redundant Privileges for Objects			*		***		++
Authorizations granted by Obsolete USERIDs					*	**	++
Objects created by Obsolete USERIDs	***				*		++
Aliases without Table		*					++
Active Log Data Sets on the Same Volume			**			***	+
Both BSDS Data Sets on the Same Volume			**			***	+
Unbalanced Tablespace Partition Distribution				***		*	+++
Obsolete PLAN TABLE Data	**						+

Benefit of solving: \*\*\* = very high, \*\* = high, \* = medium

Estimated/experienced Effort for solving: +++ = high, ++ = medium, + = low

## Often found inconsistencies / discrepancies: (4 of 5)

	Potential Space Saving	Enhanced Reliability and Consistency	Enhanced CPU/IO Performance	Enhanced Application/Utility Concurrency	Reduced Catalog Size	Resource Availability and Recoverability	E F F O R T
Inline Utilities not used during LOAD/REORG				***		*	+++
Indexes on Small Tables			**				++
Plans/Packages not using DRDA Protocol				**		*	+
Multiple Aliases for the Same Table or View					**		++
Tables that may require a Clustering Index			**				+++
Oversized LOCKMAX				***		*	++
Compression Switched on/off but no REORG/LOAD	*	**				**	+
Partition Independence not used by Utilities				***		**	+++

Benefit of solving: \*\*\* = very high, \*\* = high, \* = medium

Estimated/experienced Effort for solving: +++ = high, ++ = medium, + = low

## Often found inconsistencies / discrepancies: (5 of 5)

	Potential Space Saving	Enhanced Reliability and Consistency	Enhanced CPU/IO Performance	Enhanced Application/Utility Concurrency	Reduced Catalog Size	Resource Availability and Recoverability	<b>E F F O R T</b>
Indexes with inadequate COPY Flag	*			**		***	++
Packages having too much Versions		*			***		++
Plans/Packages candidate for REBIND			***	*		*	+++
Tables not protected by RESTRICTION ON DROP						***	++
Tables which may be damaged by LOAD REPLACE processes				*		***	++
Unrecoverable Indexes		*				***	++
Work Database Pagesets in Multiple Extents			***	*			+

Benefit of solving: \*\*\* = very high, \*\* = high, \* = medium

Estimated/experienced Effort for solving: +++ = high, ++ = medium, + = low

<p style="text-align: center;"><b>Rarely found</b> inconsistencies / discrepancies: (1 of 3)</p>	Potential Space Saving	Enhanced Reliability and Consistency	Enhanced CPU/IO Performance	Enhanced Application/Utility Concurrency	Reduced Catalog Size	Resource Availability and Recoverability	E F F T R T
IBM provided Catalog inconsistency Checks		**				*	++
Tables that may Require an Index			**	*			+++
Plans/Packages with Missing DBRM Members		***			*		++
Orphan Archive Datasets	***	*					++
Unused STOGROUPs		**					+
Non-STOGROUP Managed Table-/Indexspaces		*				***	+
Tablespaces with the Same Name	**				*		++
Non Partitioned Indexes with excessive Piecesize				**			++

Benefit of solving: \*\*\* = very high, \*\* = high, \* = medium

Estimated/experienced Effort for solving: +++ = high, ++ = medium, + = low

## Rarely found inconsistencies / discrepancies: (2 of 3)

	Potential Space Saving	Enhanced Reliability and Consistency	Enhanced CPU/IO Performance	Enhanced Application/Utility Concurrency	Reduced Catalog Size	Resource Availability and Recoverability	E F F O R T
Multiple Synonyms					**		++
Indexes Candidate to be NOT PADDED	**		***			*	+++
Indexes not used by Static SQL	***	*	**		*		++
Packages without a Plan		*			*		+++
NPIs candidates to be converted to DPSIs			*	***			+++
Broken Pages or Links in the Catalog		**				*	+++
Partitions not recoverable in parallel				**		***	++
Inefficient Compression of Tablespaces	*		***				++

Benefit of solving: \*\*\* = very high, \*\* = high, \* = medium

Estimated/experienced Effort for solving: +++ = high, ++ = medium, + = low

<p style="text-align: center;"><b>Rarely found</b> inconsistencies / discrepancies: (3 of 3)</p>	Potential Space Saving	Enhanced Reliability and Consistency	Enhanced CPU/IO Performance	Enhanced Application/Utility Concurrency	Reduced Catalog Size	Resource Availability and Recoverability	EFFORT
Table-/Indexspaces with missing GBP definition in CFRM		*				***	++
Plans/Packages that do not RELEASE AT COMMIT TIME			***	*			+++
Stored Procedures not running under WLM control			***	*			+
Tables/Views/Aliases not used by Static SQL	*				***		+++
Tablespaces having TRACKMOD NO				***		**	+
Tablespaces not reorganizable with SHRLEVEL CHANGE				***			+
Unappropriate ZPARMS for SAP		***		*			++
Unused Distinct Types	*	***					++

Benefit of solving: \*\*\* = very high, \*\* = high, \* = medium

Estimated/experienced Effort for solving: +++ = high, ++ = medium, + = low

# Conclusions

(1 of 2)

- ➔ **Similar discrepancies/inconsistencies are found in every DB2 for z/OS sites**  
(Even in very well maintained/controlled DB2 environments!)
- ➔ **Approx. 30-40% of the Performance problems as well as the Batch Window Constraints can be solved by means of an industrialization/automatization of the Housekeeping processes** (IC, REORG, RUNST., REBIND...) ..  
(*by exploiting the DB2 V7 RTS/DSNACCOR features*)
- ➔ **Approx. 50-60% of DB2-objects Availability/Recoverability problems can be solved by exploiting 'new' features like 'Inline-Utilities', 'Online Reorg.' or 'Index-Copy'.**

# Conclusions

(2 of 2)

- ➔ **We have also learned that it is wise to regularly examine/control our (TEST and PROD) DB2's**  
(at least twice a year, ideally once a month)

## **Side effects:**

DBA's, operation people and application developers, as well as systems engineers who have analyzed their DB2 catalogs / environments under the above aspects, very often say:

**“We have learned a lot and refreshed old knowledge!”**

# How 'Healthy' are our DB2 Catalogs in 2005?

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