

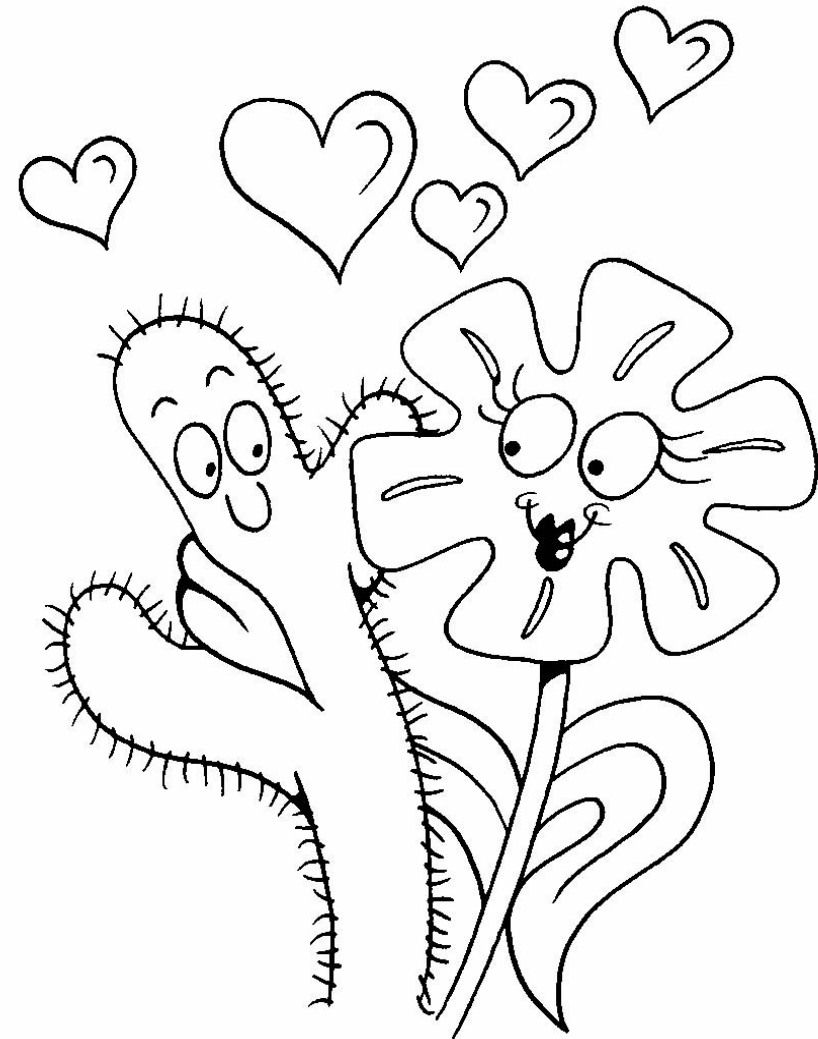
JN DATA

```
Select *  
from DBA_INSPARATION  
where (Meeting = 'Finnish DB2UG'  
and Location = 'IBM Helsinki – Munkkiniemi'  
and Title = 'Multiplatform DBA'  
and tmsp_start = '2005-04-29-13.45.00.000000'  
and tmsp_slut = '2005-04-29-14.20.00.000000')  
for update of networking  
with ur;
```

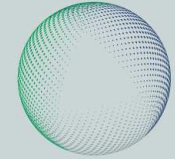
Svenn-Aage Sønderskov

sas@jndata.dk

JN Data A/S – Denmark



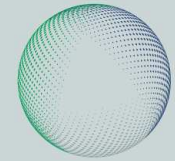
# Multiplatform DBA



JN DATA

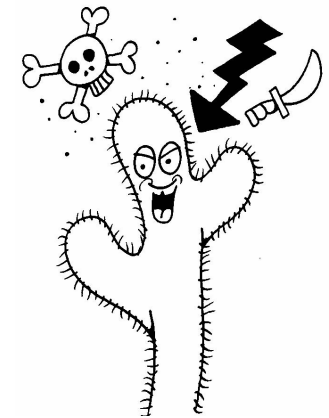
- What are the challenges
- Background update
- The mindset
- How to address challenges
- Automation samples
- Decentralising samples
- Questions

# What are the challenges ?

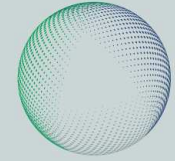


JN DATA

- Do the same as before.... And more
  - Basic skills still required !!!
- The complexity of Databases is growing
  - DBA (Procedural, Physical Logical, Network ERP, SQL, Tool or just DBA) ?
- OO – Encapsulation vs Relational DB (EAI, WEB Services, Java)
- The Platforms supported has increased,
- Applications with DB-Technology acquired
- .....

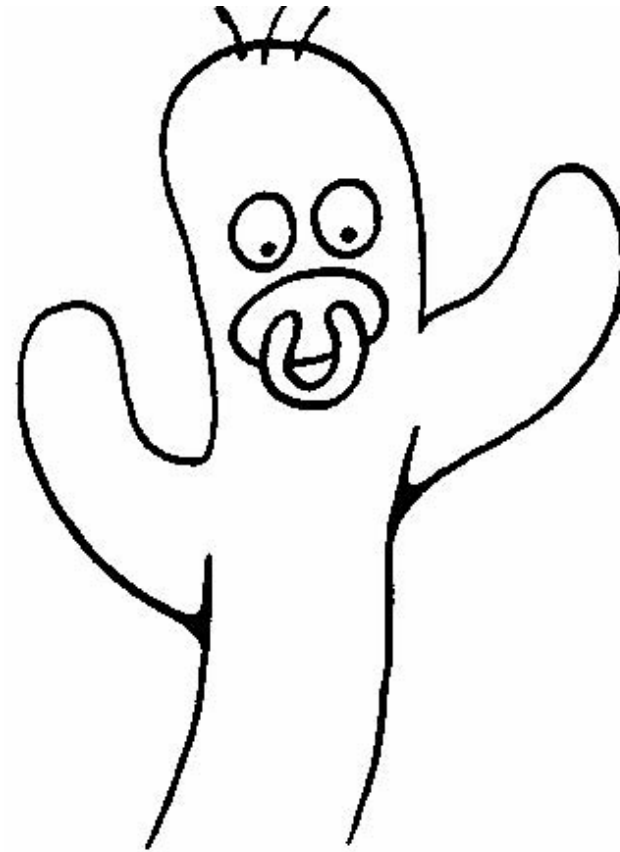


# Background update DB2 for Z/OS – Childhood



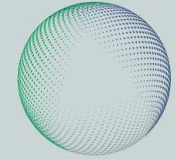
JN DATA

- DB2 V. 1, 2, 3
  - SQL
  - CICS, BATCH
  - DATE, TIME v.1.3
  - Referential Integrity v. 2.1
  - Packages v. 3



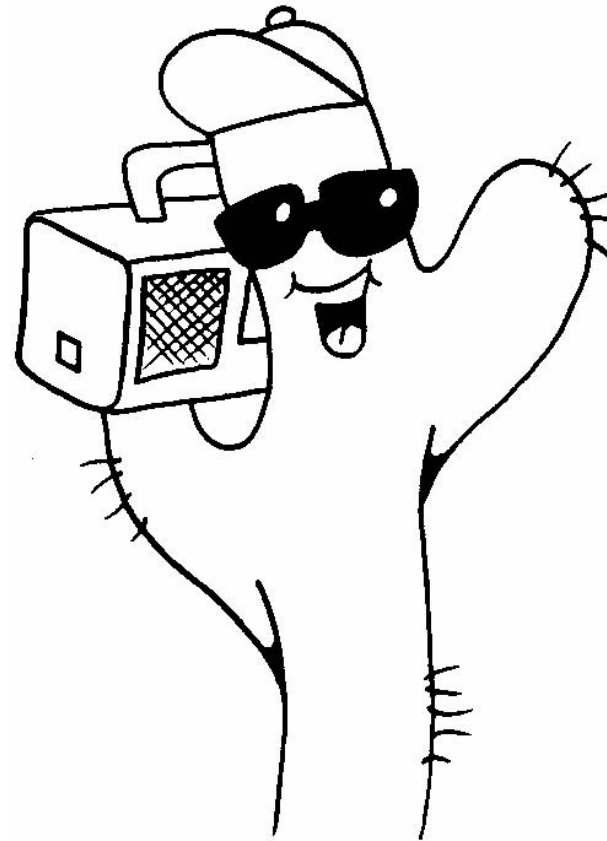
# Background update

## DB2 For Z/OS - Teenager

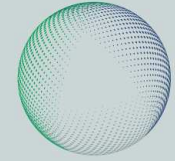


JN DATA

- DB2 V. 4, 5, 6
  - Other platforms included
  - Data sharing v.4
  - Type 2 indexes v.4
  - Stored Procedures v.4-5-6
  - Triggers v.6
  - Multiple bufferpools v.3-6
  - The DBA-role grew big

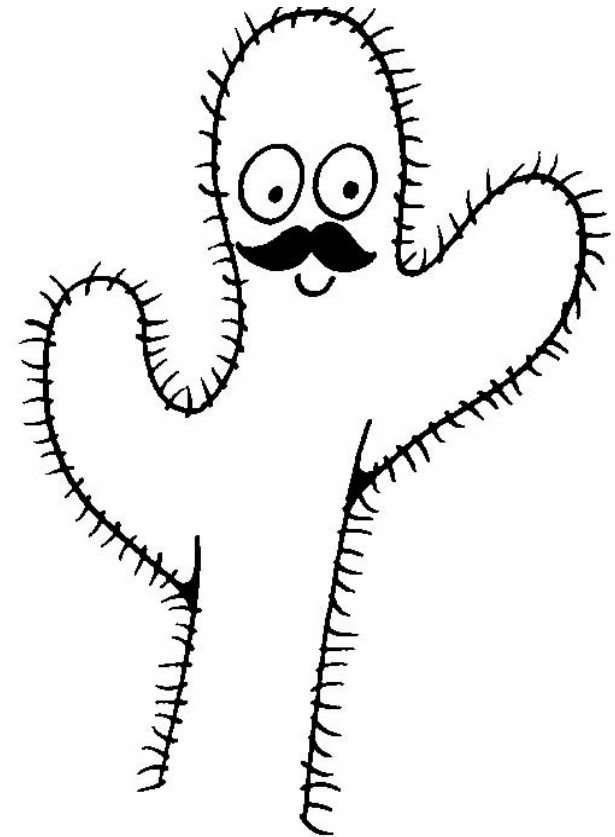


# Background update DB2 for Z/os - Adult

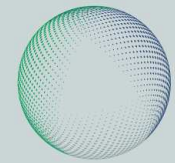


JN DATA

- DB2 v. 7 –
  - Tools not part of the Engine anymore
  - Java-objects
  - LOB-support
  - Extenders (XML)
- DB2 v. 8 -
  - New catalog
  - Unicode
  - DPSI's (New index structures)
  - Online schema-changes
  - And more

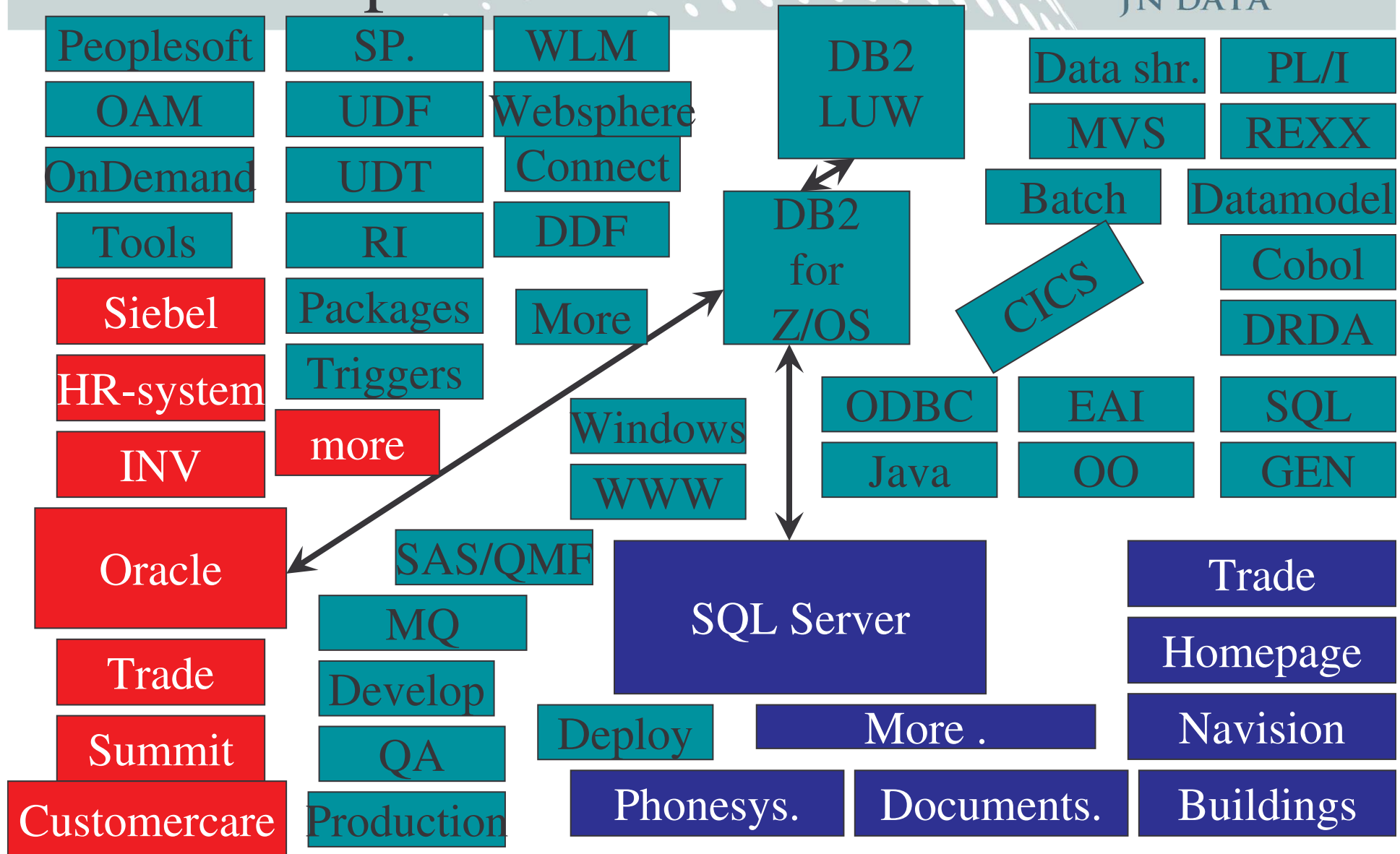


# Background update

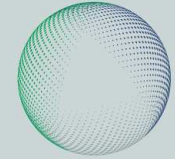


## The complex DBA-Picture at JN

JN DATA



# The Mindset – Childhood



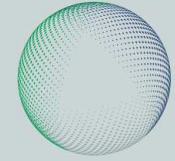
JN DATA

- We could afford to be Administrators
- We had the time to play with the technology
- The "Engine" had a clear scope



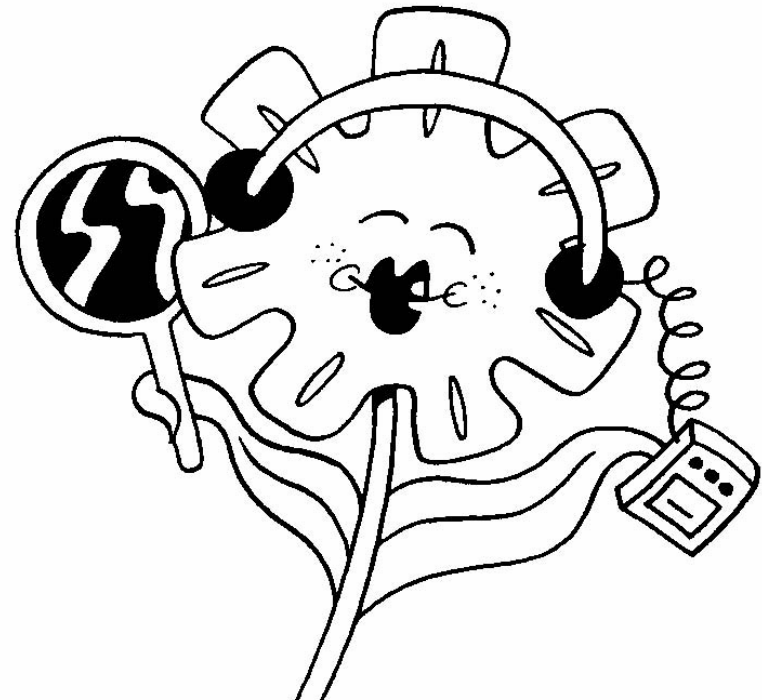


# The Mindset – Teenager

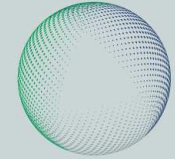


JN DATA

- The job grew and we had to make the choice if we wanted to be Administrator or Advisor
- Limiting exploitation of technology could be the tool for "survival" , but it was not acceptable.

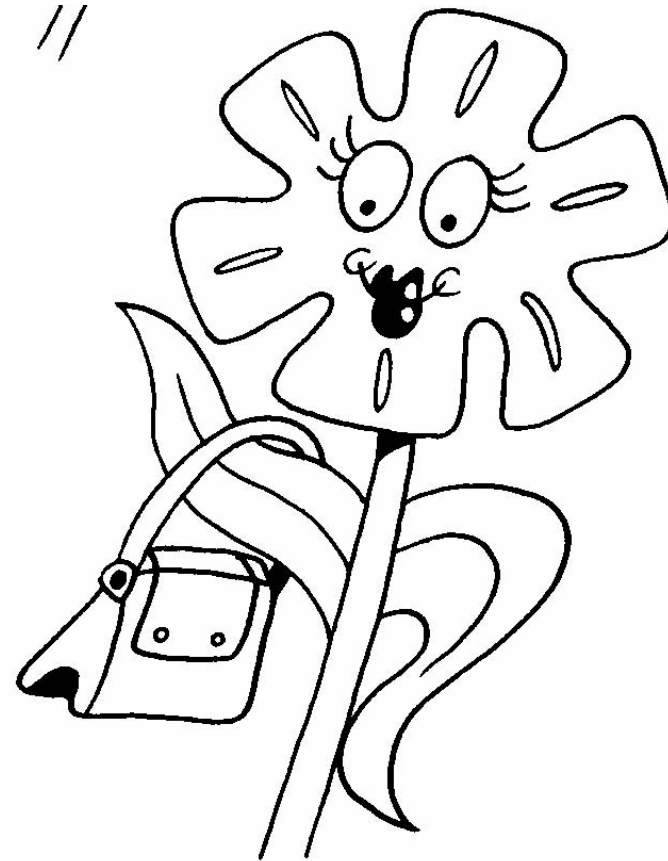


# The Mindset – Adulthood



JN DATA

- Administrator/advisor not enough
- Specialize/generalize
- Som basic skills are still required for a DBA !!!
  - Datamodelling
  - SQL knowledge
  - Performancemindset



# The Mindset - Specialize/Generalize

JN DATA

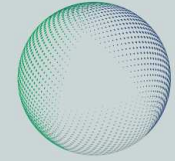
- Specialize
  - Specialization gives you experts
  - Experts knows their "stuff" in detail
  - Experts are good administrators
- Generalize
  - Generalization creates "broad minded" people
  - "broad minded"-People knows where to find "stuff"
  - "broad minded"-People are good advisors

# The Mindset - Administrator/Advisor

JN DATA

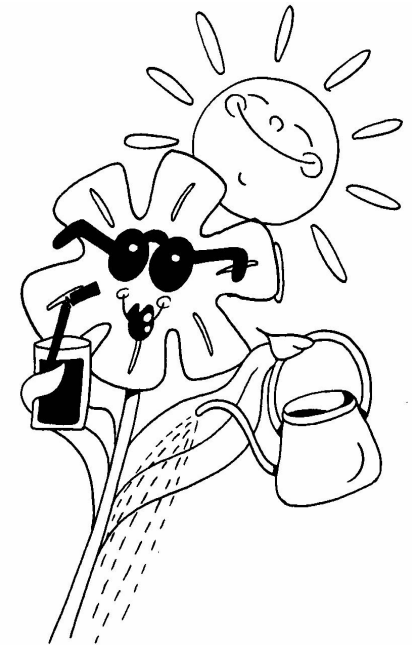
- Administrators love
  - Managing, Control, securing standards, keeping expert knowledge at the expert level, the efficiency in single point of execution.
- Advisors love
  - Decentralizing knowledge, building tools with expert knowledge in it, automation of administrative routines, Proactive thinking, NO bottlenecks

# My Choices.

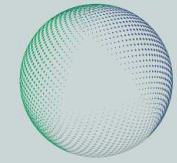


JN DATA

- Generalization
  - The drawbacks must be handled in the toolset
- Advisors
  - The drawbacks must be handled by good standardized deployment-tools and education.
- Workaround
  - Specialize/administer while implementing to get the right expert-knowledge in the tools

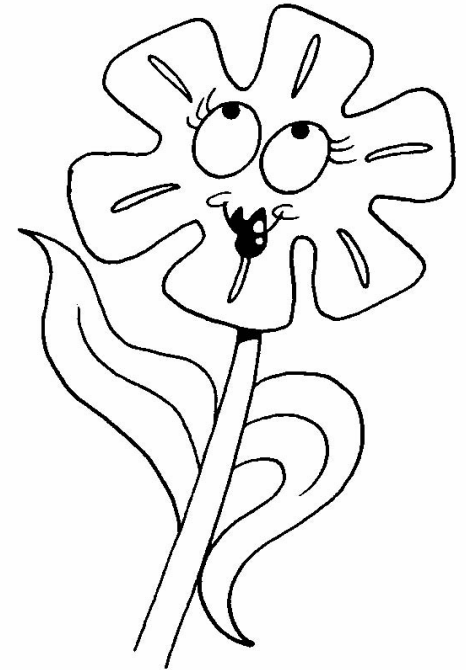


# How to handle challenges on Z/os

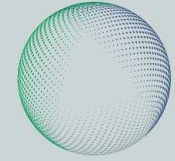


JN DATA

- Keep the toolset up to date supporting new functions and features
  - Stored Procedures, User Defined Functions and Types, Triggers, Referential Integrity
  - Standards and methods must be build into the toolset with adequate controls
  - Try to build a "Self Managing" support-structure

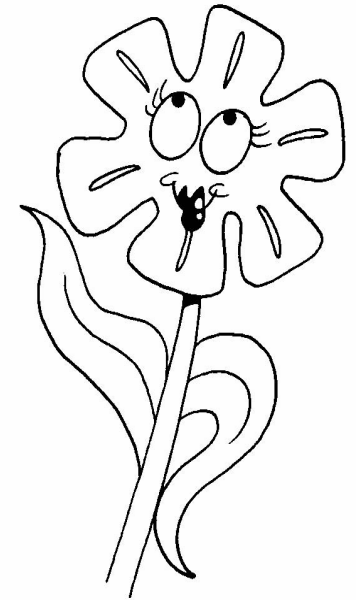


# How to handle challenges on other Platforms

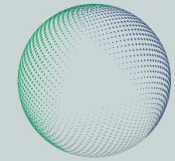


JN DATA

- To many machines – to little time !!!!
- Installation, administration and monitoring has to be automated (Sniik, Backup-scripts etc)
- Event-information has to be filtered (Both Environment and content) – Be aware of Spam
- Security issues at the OS-Level when possible to keep administration at the minimum level
- Recentralize (Cluster/specialized servers) – The issue is to keep important servers in focus



# Automating Z/os - Tools

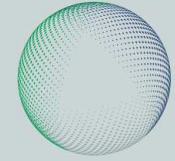


JN DATA

- Reorganize - BMC DASD Manager
- Deployment - Own tools and Change Manager
- Automated exception routines monitor objects and generates Email to owner/central production planner or generates actions.
- Package Cleanup
- Space update routine
- Access path warnings
- DB2 health check (Backup, restricted space, stopped utilities etc)



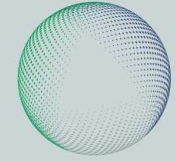
# Automating Other platforms



JN DATA

- Silent Installation (Includes Security, Backup and setup)
- Tivoli keeps an eye on the servers (Services, Events etc)
- TSM handles backup-archiving
- Checking piped output (Backup etc)
- Clustering where possible
- And more !!!

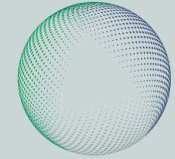
# Decentralising Z/os-work



JN DATA

- DASD - SMS
- Security - RACF
- Optimize - Strobe
- CMXR - Warehouse (Details)
- Monitor - TMON + CMXR (Details)
- Deployment - BMC Change Manager
- Catalog Tool with OEM-Integration
- Runaway - TMON SQL Analyzer
- Good tools are important to keep work at a manageable level

# Some of the tools



JN DATA

- Statement-generation
- Utility-generation incl. Templates.
- Database-portal
- DSN1COPY, DSNTIAUL, UNLOAD + Part
- Check Data with Exceptions.....
- Database DDL-Cloning (Using Chg Mgr)
- Xref-system (Job, Prg, Security, Dep etc)
- Performance-DW
- DW-infrastructure – Homecooked ETL
- ERP-Datacloning

SD ----- Catalog Management COBOL Generator -----

Option ==>

Table/view ==> SYSCOLUMNS

Creator ==> SYSIBM

Cursor ==> CU1

Commentbox ==> NO

Suffix ==>

Evaluate ==> CICS

Customer ==> BANK

Fetch UR ==> NO

USERID - TEKSAS

TIME - 13:57

TERMINAL - 3278

PF KEYS - 24

SUBSYS - DB2U

CATALOG - SYSIBM

(Optional)

(Yes/No)

(Optional for DCL)

(CICS/BATCH/SP)

(BANK/SALARY)

(Yes/No)

Option

CLO - Close Cursor-statement

CUR - Declare, Open, Fetch and Closestatement

DCL - DCLGEN-working storage-struktur

DEC - Declare cursor for select-statement

DEO - Declare/Open for Select-statement

DEL - Delete from-statement

FET - Fetch-statement

DW - Create Datawarehousekeletonprogram

Option

INS - Insert-statement

OPE - Open cursor-statement

SEL - Select-statement

SET - SET-statement

SQL - SQLCA/RSQLCA -include

UPD - Update-statement

Enter END to end Catalog management COBOL generator

SD ----- Columns from DB2U.SYSCOLUMNS ----- Row 1 to 22 of 29  
Command ==> SCROLL ==> CSR

Type ==> SEL  
Key ==> SYSIBM SYSCOLUMNS CUI

Tryk F3 to start COBOLstatementgeneration

Felt- Name Index Remarks

Valg X NAME \*  
X TBNAME \*  
X TBCREATOR \*  
W COLNO  
W COLTYPE

LENGTH  
SCALE  
NULLS  
COLCARD  
HIGH2KEY  
LOW2KEY  
UPDATES  
IBMREQD  
REMARKS  
DEFAULT  
KEYSEQ  
FOREIGNKEY  
FLDPROC  
LABEL  
STATIME  
DEFAULTVALUE  
COLCARDF

```
EDIT      SYS03133.T115711.RA000.TEKASAS.R0337235      Columns 00001 00072
Command ==>
000001 *****
000002 SQL-SELECT-SYSCOLUMNS SECTION.
000003 *-----
000004 EXEC SQL
000005     SELECT NAME,
000006            TBNAME,
000007            TBCREATOR
000008     INTO   :NAME,
000009            :TBNAME,
000010            :TBCREATOR
000011     FROM   SYSCOLUMNS
000012     WHERE  NAME
000013            AND TBNAME
000014            AND TBCREATOR
000015            AND COLNO
000016            AND COLTYPE
000017     END-EXEC.
000018
000019 EVALUATE TRUE
000020     WHEN  SUCC-EXEC
000021         CONTINUE
000022     WHEN  ROW-NOT-FOUND
000023         MOVE '..... not found' TO W-MEDD
000024         PERFORM UDFYLD-MEDD
000025     WHEN  OTHER
000026         INVALID-DATETIME *
000027         NO-NULL-INDICATOR *
```

SD ----- Catalog Management Utility Generator -----

```
Option ==> fic_
CM04 - Indtast option
Database ==> DSNDB06
Tablespace ==>
Partition ==>
Part niv. ==> J (J/N)
Dan GDG ==> N (J/N)
Jobopdel ==> N (J/N)
Where ==>
```

```
Option
CHD - Check Data
CHI - Check Index
FIC - Full Image Copy
FIX - Full Image Copy med safety
GDG - Dan GDG til backups
IC - Image Copy med Template
ICE - Image Copy med Template i Eget navn
QUI - QUIesce

Option
REC - RECover
REO - REOrg
RIX - Recover index
RUI - Recover Uden Indexer
RUN - RUNstats
SE - Setup af defaultværdier
```

Enter END to end Catalog management Utility generator.

```
SD ----- Valgliste til utilitygenerering -- Row 1 to 20 of 20
Command ==>
Type ==> FIC
Key ==> DSNDDB06.
```

Tryk F3 for at starte Utility-genereringen.

Felt-	Database	Tsname	Part
valg	DSNDDB06	SYSCOPY	0
S	DSNDDB06	SYSDBASE	0
S	DSNDDB06	SYSDBAUT	0
S	DSNDDB06	SYSDDF	0
	DSNDDB06	SYSGPAUT	0
	DSNDDB06	SYSGROUP	0
	DSNDDB06	SYSGRTNS	0
	DSNDDB06	SYSHIST	0
	DSNDDB06	SYSJAUXA	0
	DSNDDB06	SYSJAUXB	0
	DSNDDB06	SYSJAVA	0
	DSNDDB06	SYSOBJ	0
	DSNDDB06	SYSPKAGE	0
	DSNDDB06	SYSPLAN	0
	DSNDDB06	SYSSEQ	0
	DSNDDB06	SYSSEQ2	0
	DSNDDB06	SYSSTATS	0
	DSNDDB06	SYSSTR	0
	DSNDDB06	SYSUSER	0
	DSNDDB06	SYSVIEWS	0

\*\*\*\*\* Bottom of data \*\*\*\*\*





DB2 Universal Database - Microsoft Internet Explorer provided by JN Data

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss Go Links

Address <http://jyske/itteknik/produkter/DB2/>

**Database strategi**

**Miljøer og standarder**

- DB2 for OS/390
- DB2 V7 kataloget
- Access Paths
- Retningslinier for definitioner
- SQL Programmer's Checklist
- SQL kolonne funktioner V7
- SQL Reference V7
- Stored Procedures
- SQL artikler

**DB2 for NT**

**DB2 Værktøjer**


**Drift**

**Support og organisation**

**DB2 Undervisning**

**DB2 links**

- DB2 Product family
- DB2 for OS/390
- DB2 for OS/390 manualer V7
- DB2 UDB for NT
- DB2 UDB for NT manualer V7
- IBM Data Mgmt. Developer Domain
- Redbooks
- IBM DK Uddannelse

 **Jyske Net** 31.01.2003

[IT-teknik for edb-udviklere](#)

## DB2 Universal Database

I denne del af [Jyske Net](#) kan du læse om brugen af DB2 databaser i Jyske Bank. Siderne er målrettet til IT-udviklere og beskriver database-miljøer og standarder, og giver gode råd i brugen af SQL og værktøjer.

**"Let's do it relational,  
- let's do it on tables"**

**Sidste Nyt**

- 31.01.2003** [IBM har annonceret DB2 V8 for z/OS](#)
- 31.01.2003** [Referat fra januar's DB-reference gruppe møde](#)
- 09.12.2002** [Referat fra december's DB-reference gruppe møde](#)
- 05.12.2002** [Foils fra Databaseteamets infomøder december 2002](#)
- 10.08.2002** Ny Visual Explain v.7.1 der kan *printe* er installeret på alle Udvikler arb.pladser.
- 19.04.2002** [Interessant artikel om SQL:](#)  
Sheryl Larsen on the Power of Table Expressions
- 07.02.2002** [Interessant artikel om SQL:](#)  
Terry Purcell on Outer Joins - where do you code your predicates?
- 14.12.2001** [Præsentation: DB2 v7 Infomøde](#)
- 30.09.2001** [Checkpoint/Restart for DB2&MQS](#)  
[Nye C/R performance målinger](#)  
alt C/R dokumentation skrevet nm

**Målgruppe**  
IT-udviklere

**Tekstansvar**  
[Svenn-Aage Sønderkov](#)  
IT-systemteknik

Kommentér Redigér

[Dokument-oplysninger](#)

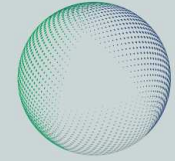
Søg: **Jyske Net**

Local intranet

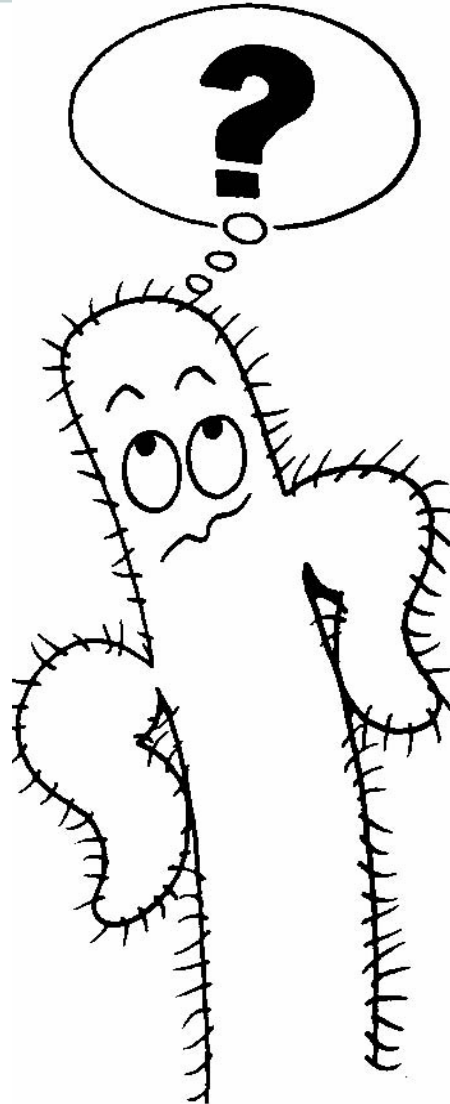
```
EDIT      SYS05117.T092220.RA000.TEKSAS.R0290895      Columns 00001 00072
Command ==>      Scroll ==> CSR
*****
000001 //TEKSASX JOB (051TEK,05),'TEKSAS ',
000002 //*=
000003 //*      CHECK DATA TABLESPACE DSNDB06.SYSDDF      =
000004 //* EXCEPTION-TABLESPACE CHSYSDDF      WILL BE DEFINED =
000005 //* EXCEPTION-TABEL CHNAMES      WILL BE DEFINED =
- - - - - 6 Line(s) not Displayed
000012 //DYNSQL EXEC PGM=IKJEFT01,COND=(4,LT)
- - - - - 7 Line(s) not Displayed
000020 //SYSTSIN DD *
000021 DSN SYSTEM(DBU0)
000022 RUN PROGRAM(DSNSTEP2)
000023 END
000024 //SYSIN DD *
000025 SET CURRENT SQLID = 'SYSIBM';
000026 ** * * * * DEFINE TABLESPACE * * * * *
000027 CREATE TABLESPACE CHSYSDDF
      IN DSNDB06
      SEGSIZE 4;
000030 ** * * * * DEFINE TABLE IPNAMES
      LIKE SYSIBM.IPNAMES
000031 CREATE TABLE SYSIBM.CHNAMES
      IN DSNDB06.CHSYSDDF;
000032
000033 ALTER TABLE SYSIBM.CHNAMES
      ADD RID CHAR(5);
000034 ALTER TABLE SYSIBM.CHNAMES
      ADD TIME TIMESTAMP NOT NULL WITH DEFAULT;
000035
000036
000037
```



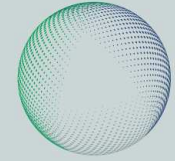
# Questions ??



JN DATA



# They lived happily ever after



JN DATA

